

THE AMERICAN
School Board Journal
A PERIODICAL *o* SCHOOL ADMINISTRATION

Devoted to the Interests of School Boards, Superintendents,
School-Business Officials, and School Architects



VOLUME 84
JANUARY—JUNE, 1932

THE BRUCE PUBLISHING COMPANY
NEW YORK • MILWAUKEE • CHICAGO

PERIODICAL ROOM
GENERAL LIBRARY
UNIV. OF MICH.

THE AMERICAN School Board Journal

A PERIODICAL OF SCHOOL ADMINISTRATION



THIRTY-SECOND ANNUAL SCHOOL BUILDING NUMBER

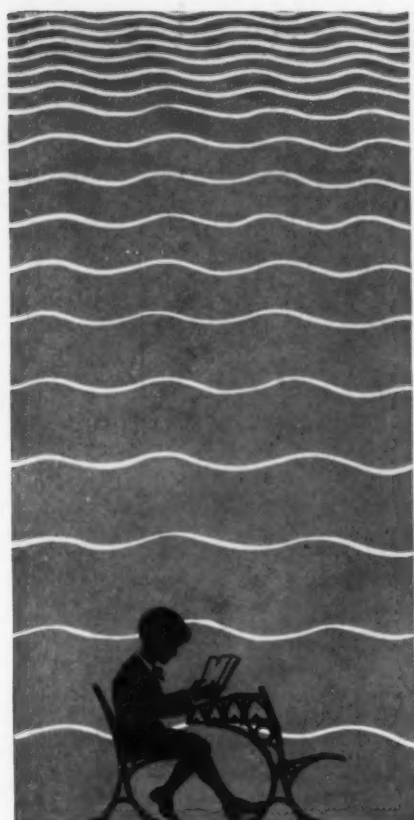
January, 1932

Milwaukee

The Bruce Publishing Company

Wisconsin

Which kind of ventilation for your school?



Cold Floor—Warm Ceiling
ORDINARY VENTILATION



Uniform Distribution

UNIVENT VENTILATION

School authorities are coming more and more to realize that a continuous supply of outdoor air does not of itself, constitute good school-room ventilation. Unless the air is properly cleaned, properly heated and properly diffused, comfortable and healthful atmospheric conditions cannot be maintained.

The Univent not only draws air from out of doors, cleans it, and warms it to the correct temperature, but distributes it in a scientific manner that assures warmth and comfort for every pupil in the room.

Unlike ordinary ventilating systems, the Univent is an effective *warm air diffuser*. Due

to its high velocity vertical jet discharge, the warm air strikes the ceiling, spreads outward over the entire room, and is deflected downward, reaching every nook and corner, mixing thoroughly, and breaking up all "air pockets."

Thus, with Univent ventilation, there are no overheated ceilings to waste fuel—no chilly floors to jeopardize pupils' comfort and health. There is constant gentle air motion but *no drafts*.

Leading school architects, engineers, and school board members know that the selection of Univent ventilation is a true service to their community. Write for a free copy of the book, "Univent Ventilation."

**HERMAN
NELSON
UNIVENT
VENTILATION**

THE HERMAN NELSON CORPORATION, Moline, Illinois

Factory at Moline, Illinois. Sales and service offices in all principal cities

Belfast
Portland, Me.
Boston
Springfield,
Mass.
Providence
New York City
Albany
Syracuse

Rochester
Buffalo
Scranton
Philadelphia
Allentown
Harrisburg
Erie
Johnstown

Pittsburgh
Wheeling
Washington
Charlotte
Cleveland
Cincinnati
Toledo
Akron

Louisville
Memphis
Chattanooga
Knoxville
Nashville
Miami
Birmingham
Indianapolis

Detroit
Milwaukee
Appleton
Chicago
Peoria
Evansville
St. Louis
Kansas City

Des Moines
Minneapolis
Duluth
Omaha
Emporia
Denver
Dallas
Salt Lake City

Butte
Spokane
Seattle
Portland
San Francisco
Calgary
Vancouver
Winnipeg

Toronto
London
Osaka
Tokyo
Oslo
Melbourne
Athens
Buenos Aires
Shanghai

Not only Manufacturers but Originators and
Pioneers of Univent Ventilation, the Her-Nel-Co
System of Ventilation, the Invisible Radiator,
and other heating and ventilating innovations
that have received world-wide recognition.

1932

USE SLATE for ECONOMY THIS YEAR NOT ONLY for BLACKBOARDS BUT FOR MANY STRUCTURAL USES

Every Month, Every Day in the Year, Consider a Material That Will Outlast the Building		<i>Pyramid Natural Slate Blackboards</i> 1	<i>Pyramid Penn - Mont Beautiful Slate Roofs</i> 2
<i>Pyramid Interior and Exterior Slate Window Sills</i> 3	<i>Pyramid Penn - Mont Beautiful Slate Floors</i> 4	<i>Pyramid Slate Toilet Partitions</i> 5	<i>Pyramid Slate Shower Stalls</i> 6
<i>Pyramid Slate Non-Slip Non-Wear Slate Stair Treads and Risers</i> 7	<i>Pyramid Slate Coping and Spandrels</i> 8	<i>Pyramid Slate Laboratory Table Tops, Trays and Sinks</i> 9	<i>Pyramid Slate Wainscoting</i> 10
<i>Pyramid Slate Base Thresholds and Plinths</i> 11	<i>Pyramid Slate Electrical Switchboards</i> 12	<i>Pyramid Kork Bulletin Board</i> 13	<i>Pyramid Slate Exterior Base Course</i> 14

1931

School officials and architects last year in using genuine Natural Slate, found economy and permanence in a material that would give constant service under the most severe conditions. Plan your school this year so that you will receive the benefit of a sound material that will outlast the building. Write for books covering above subjects. . . . Designate by number.

"A Word to the Wise"

You can wash genuine Slate Blackboards with water, keeping them clean, fresh and dustless at all times. When purchasing blackboards find out for your own protection first before ordering whether they can be washed with water.

**NATURAL SLATE
BLACKBOARD COMPANY**
Pen Argyl, Penn.



PREFERRED FOR EXACTING PLUMBING SINCE 1878

CLOW

CHICAGO

Consult Your Architect

"WELCOME! WELCOME! To Our Classroom"

Too often at the doors of school toilet rooms and around school plumbing fixtures these *grim professors of insanitation* say, "Welcome"—welcome to everything which plumbing is supposed to combat: insanitation, uncleanness, filth, dirt, and even disease and death.

For more than fifty years the Clow Soldier of Sanitation has been chasing this unwanted group out of schools, and other public or semi-public buildings.

During that time Clow has designed the most complete line of specialized plumbing equipment designed particularly to meet school needs.

In addition, Clow has developed the most exhaustive tests known to the industry to assure that each piece of equipment bearing the Clow name will function properly not only when it reaches the job but through the years to come.

It is as much a part of the Clow Soldier of Sanitation's job to "lick" excessive costs as it is to "lick" the grim, unseen *department of insanitation*.

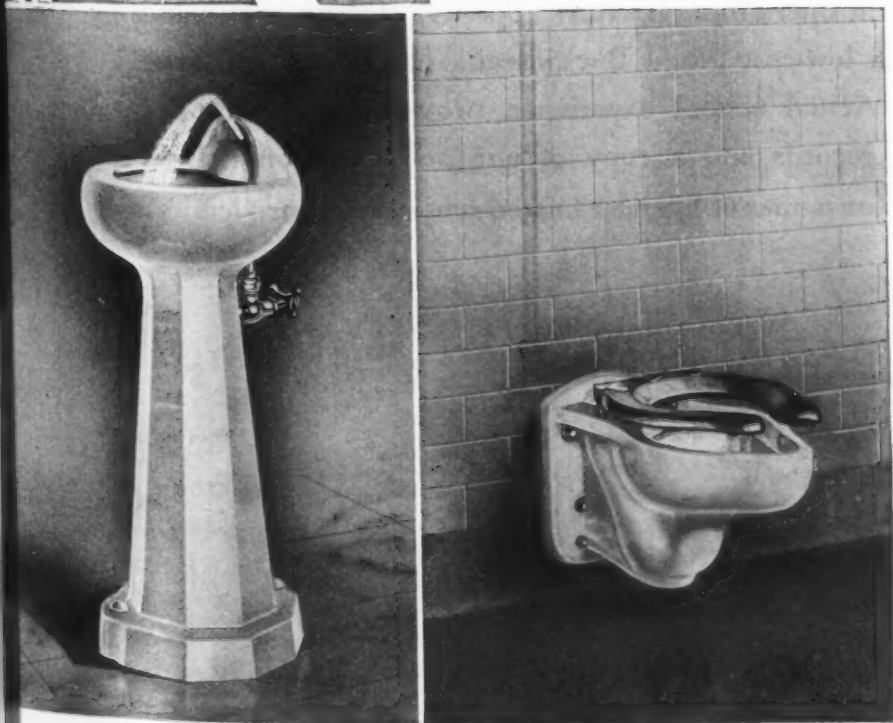
He stands ready, not only to help you get perfect sanitation for your school—but to get that sanitation at the most economical original cost—and always at the lowest possible through-the-years cost.

He is your ally. Call him in.

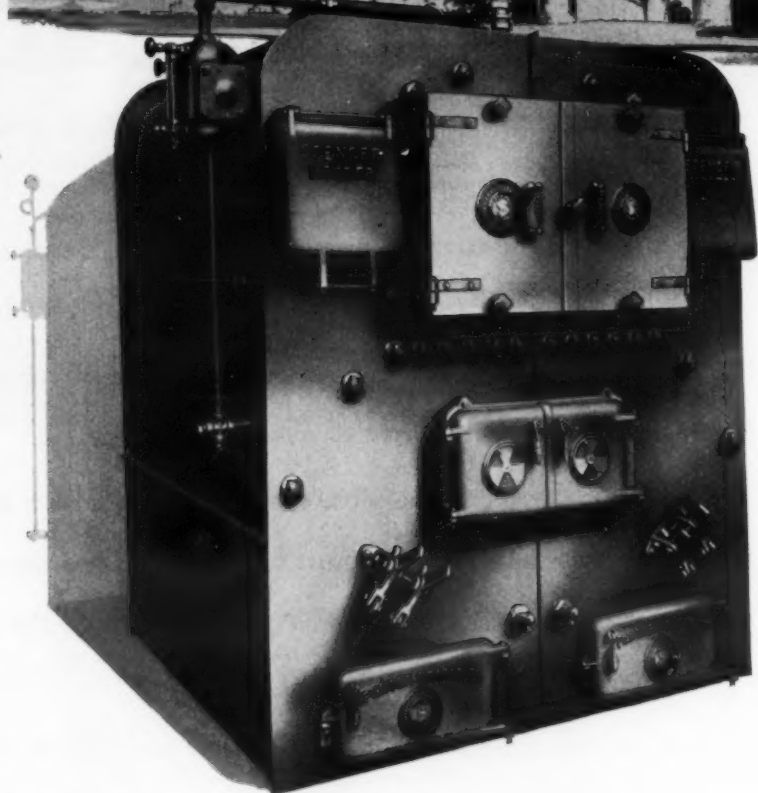
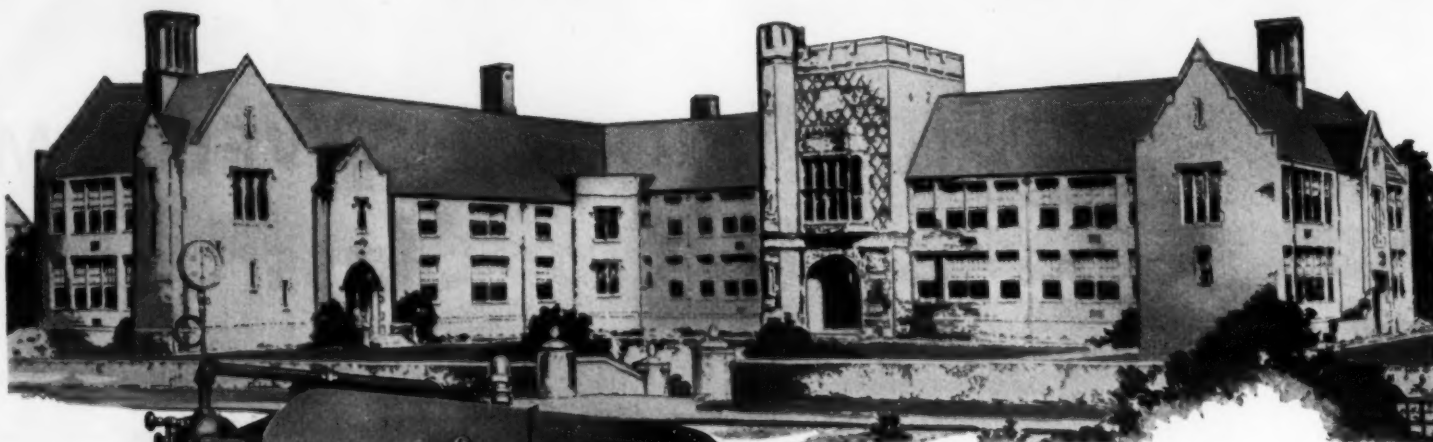
Here are two members of the most complete line of specialized school plumbing fixtures in the world.

To the Left: a Clow angle-stream pedestal-type drinking fountain—no contamination can reach the water spout—no playful child can squirt the water.

To the Right: a Clow-Madden, Automatic Wall-Hung Closet—after every occupation it flushes itself. The complete line of Clow fixtures for schools is shown in Catalog No. 50. Ask for a copy.



For "1932 Model" School Buildings: SPENCER LOW-COST AUTOMATIC HEAT



Beaty School, Warren, Pa.

Architect
Lawrie & Green, Harrisburg, Pa.

Heating Contractor
F. T. Withers Sons Company

Two Spencer Steel Tubular Boilers Used



Spencer Heat is in keeping with today's trend: Modern in design; scientifically correct for greatest heating efficiency; automatic—and economical in operation. Exclusive Spencer sloping grates and automatic gravity feed make it possible to burn low-cost No. 1 Buckwheat Anthracite to produce clean, uniform, healthful, labor-saving heat. Actual school experience proves Spencer Boilers offer lowest operating cost. Write for actual records and a copy of our new book on School Heating. Yours without cost or obligation. Ask for names of Spencer heated schools in your vicinity.

SPENCER HEATER COMPANY

WILLIAMSPORT, PENNSYLVANIA

The Spencer Foundry Company, Ltd., Toronto, Canada

SPENCER
Magazine Feed
BOILERS
for steam, vapor or hot water

JOHNSON

Periodic Flush Systems



Johnson Pneumatic Time Flush Clock, Warren Telechron Driven.



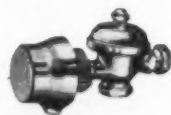
Johnson Flush Clock, for alternate flushing.



Johnson Pneumatic Multiple Time Flush Clock, Warren Telechron Driven: 6 Point Flushing Clock Illustrated above. 2 Point Flush Clock Illustrated below.



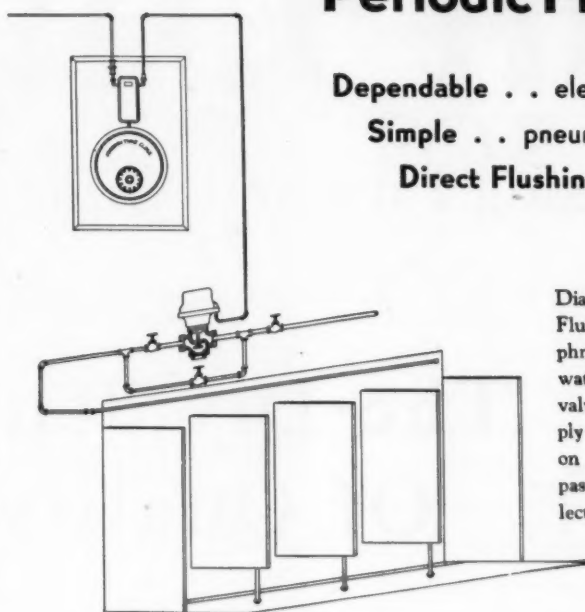
A Sloan Royal Flush Valve With Johnson Air Motor.



Watrous Flush Valve With Johnson Air Motor.



A Standard Johnson Syphon Reverse Valve.



Dependable . . electric clock control.

Simple . . pneumatic valves and relays.

Direct Flushing . from city water supply.

Diagram shows a Johnson Single Time Flush System. Normally closed diaphragm valve insures against waste of water in case of trouble. Time flush valve by-passed so that continuous supply may be had. Lock-shield gate valves on each side of flush valve and in by-pass. A switch may be arranged to select manual or clock operation at will. Johnson Multiple Time Flush Systems are described in Bulletin C-301.

NOW it is possible to have an efficient and reliable periodic flush system.

An electric clock, actuating pneumatic relays, positively opens and closes diaphragm valves and causes flushing to take place automatically for any desired length of time. The full force of the city water supply is utilized for cleansing purposes. The valves may be arranged so that sections are flushed at intervals or there may be one valve to flush in all parts of the building simultaneously.

The multiple arrangement is desirable in large buildings, reducing the load on the water supply and waste pipes. Johnson Flush Systems require no troublesome float control mechanism. They are positive and direct in their action.

SEND for Bulletin C-301 which illustrates and describes in every detail the various interesting features of

Johnson Periodic Flush Systems . . . both single and multiple. Become posted at once on this important new advancement. A card will bring Bulletin C-301.

JOHNSON SERVICE COMPANY MILWAUKEE, WIS.

507 E. Michigan Street

Established 1885

BRANCHES IN ALL PRINCIPAL CITIES

MANUFACTURERS
OF
JOHNSON HEAT
AND
HUMIDITY CONTROL

Von Duprin

REG. U. S. PAT. OFF.

Self-Releasing Fire and Panic Exit Latches

The Dividends Of Quality

There are probably times when cheap things are economical.

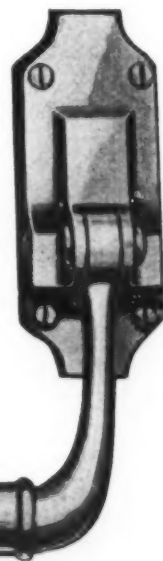
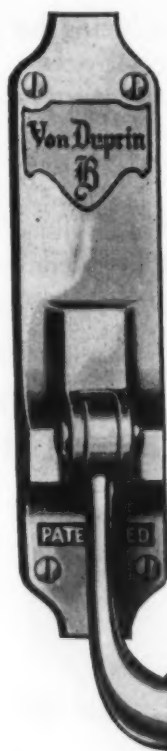
But, strangely enough, when you buy panic devices, the top quality - - the new series genuine Type "B" Von Duprin - - pays dividends which no device less well built can hope to match.

These dividends take the form of direct savings in upkeep costs, freedom from trouble and interruptions.

Others are in even more precious form - - in freedom from worry, for Type "B" Von Duprins have ample strength to stand up under emergency operation; in the knowledge that the best possible provision has been made for the children occupying the building.

Combine excellence with economy. Have your architect specify the genuine Type "B" Von Duprin devices, as an item separate from the finishing hardware. *Thus, you foster clean competition, since all reputable dealers can buy them at the same fair prices.*

Sweet's, Pages
C3217-C3219

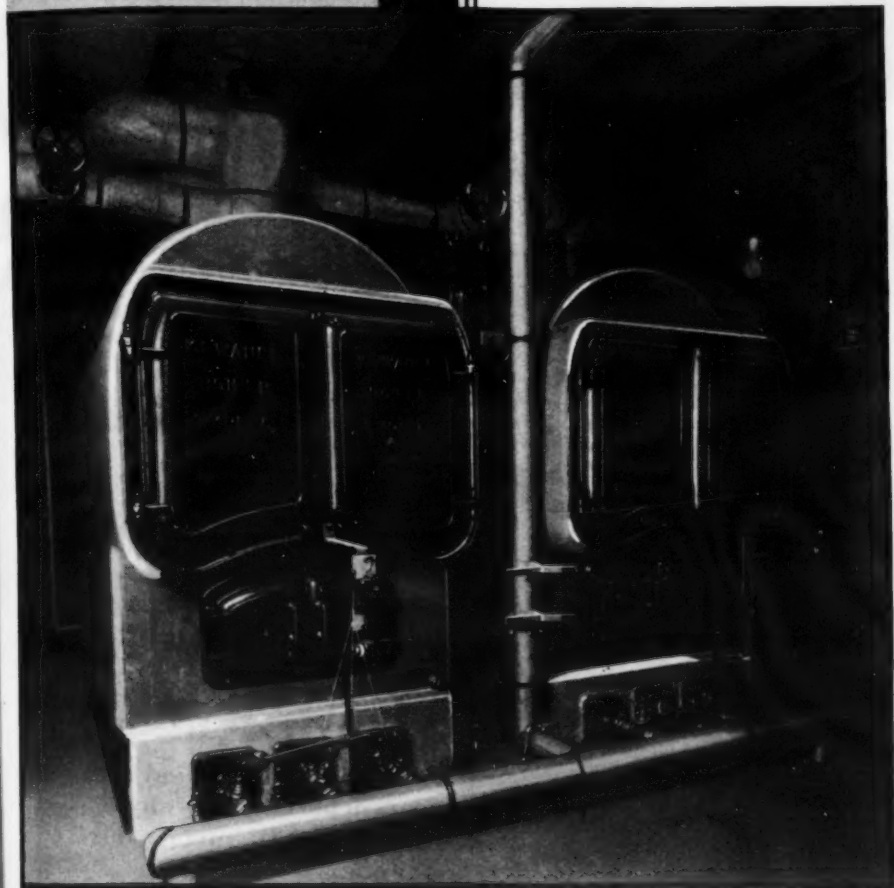


VONNEGUT HARDWARE CO.
Indianapolis, Ind.

Listed as Standard by Underwriters' Laboratories

KEWANEE

STEEL BOILERS



Photograph shows two Kewanee Type "C" Boilers, burning gas in the JUNIOR-SENIOR HIGH SCHOOL, CONCORDIA, KANS. This modern building designed by Proudfoot, Rawson, Souers & Thomas is typical of the modern schools which have selected Kewanee.

FOR COAL Hand or Stoker Fired OIL or GAS

The use of mechanical means of getting fuel into a boiler does not, in any way, change the fact that the boiler must be "right." After all, while the Oil or Gas Burner or Coal Stoker *makes the heat* it is up to the boiler to use *that heat* economically.

So no matter how efficient an oil or gas burner or coal stoker may be, the heating plant as a whole is bound to be wasteful unless the boiler is properly designed, proportioned and built to do its job.

The Efficiency of Any Heating Plant Depends Primarily on the Boiler

Since the first days of steel heating boilers—when coal, fired by hand, was the only fuel used—Kewanee Boilers have been recognized as the most economical in the use of fuel.

Today, with oil, gas and stoker firing increasing in popularity Kewanee is again proving that *it is the right boiler to use*, no matter what the fuel.

Careful tests made "on the job" and in our own laboratory have proved the ability of Kewanee Boilers to handle every kind of fuel to the complete satisfaction of the building owners.

More fine schools are heated with Kewanee Boilers than by all other similar makes combined. A copy of our book "Kewanee in Service in Schools" illustrating some of them will interest any one concerned with school buildings.

KEWANEE BOILER CORPORATION

division of American Radiator & Standard Sanitary Corporation
KEWANEE, ILLINOIS Branches in Principal Cities

MEMBER OF STEEL HEATING BOILER INSTITUTE



Could this happen at your school?

Get this Free Book telling you how to make showers SAFE

Negligence on the part of school authorities in providing Safe Shower Baths leads to trouble and often to expensive damage suits. Do not delay investigating the Powers Safety Shower Mixer and Thermostatic Water Controller.

Our book shows how Harvard University, Northwestern University, St. Louis Board of Education, Detroit School Board, and hundreds of others are using the Powers Safety Mixing Valves to prevent accidents.

The Powers Safety Shower Mixer will regulate the temperature of individual showers and keep that temperature where it is wanted. No chance of getting scalded because of pressure fluctuations in supply lines or failure of cold water supply. No slipping or falling on wet tile floors trying to escape "shots" of hot or cold water.

The Powers Thermostatic Water Controller mixes hot and cold water in large quantities and delivers at any safe temperature desired for group showers, progressive showers, etc. Absolutely scald-proof.

Powers Mixers save hot and cold water. They prevent steam in bath rooms, which loosens paint and plaster; and they reduce repair expense, because they have no valve seat washers on hot water inlets to wear out and need frequent replacement.



USE THIS COUPON
No obligation incurred

THE POWERS REGULATOR CO.
2721 Greenview Ave., CHICAGO

We want to make our showers SAFE. Send us your book on mixing valves.

Name..... Title.....
School and Address.....

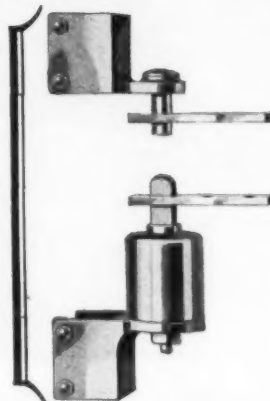
FOR SCHOOL TOILETS and SHOWERS

ONE OF the greatest civilizations in history—the Roman Empire, lies in dust and decay because the ideals and principles on which it was built were not instilled in the minds of its children.

So, too, does America's future depend on its schools. And so, too, do children's ideals of cleanliness and sanitation—their health and their morals—depend to a great extent on their school toilet rooms.

Sanymetal Steel Toilet Partitions are built for cleanliness and protection—for beauty and utility. Easily cleaned, no cracks and crannies for germs and dirt to collect, rigidly constructed to withstand the hardest kind of wear. The new Sanymetal "Shrivel" Finish is especially mar-and-scratch resisting, and lends little encouragement to aspiring young "lava-tory" artists.

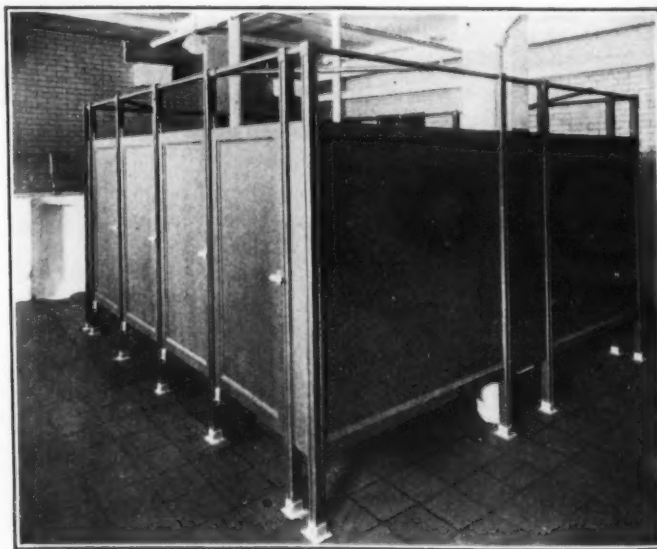
Sanymetal Products for Schools are: Toilet, shower, dressing and urinal compartments. Corridor and smoke screens. Metal doors and wainscot. Sanymetal Gravity Hinges. Write for New Catalog No. 30.



SANYMETAL Full-Floating Ball-Bearing Gravity Roller HINGES

are designed for use on toilet doors or partitions of any material—marble, metal, slate, or wood.

Write for Bulletin 51.



IN CATHEDRAL LATIN SCHOOL, CLEVELAND

The Sanymetal Products Co.
1703 Urbana Road Cleveland, Ohio

Sanymetal STEEL PARTITIONS

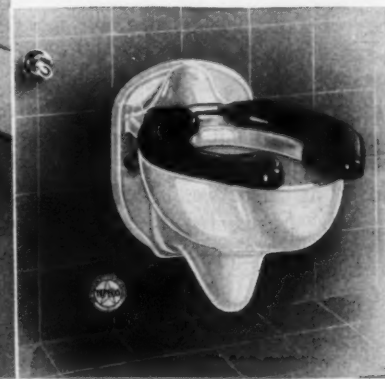


Closet 10 inches high—Lavatory 24 inches high.



Harkness Memorial, New Haven, Conn.
James Gamble Rogers, Architect

Plate 4611-T Te-Pe-Co Vitreous
China Wall Closet on Concealed Carrier



PLUMBING FIXTURES... *for kindergarten or college...*

ABOVE is a Juvenile closet and lavatory... for small children... of true Te-Pe-Co quality, design and durability. Both are ideally suited to their environments... both will give the daily satisfactory service... the years of usefulness... for which all Te-Pe-Co all-clay plumbing fixtures are justly famous. Throughout America's most representative

schools and colleges you'll find a rapidly growing appreciation... a constantly increasing specification of plumbing fixtures designed and produced by The Trenton Potteries Company. Let us assist you in the selection of fixtures best fitted to meet the individual requirements of any educational institutions with which you may be working.



OUR GUARANTEE We make but one grade of ware—the best that can be produced—and sell it at reasonable prices. We sell no seconds or culls. Our ware is guaranteed to be equal in quality and durability to any sanitary ware made in the world. The Te-Pe-Co trademark is found on all goods manufactured by us and is your guarantee that you have received that for which you have paid.

THE TRENTON POTTERIES COMPANY

TRENTON, NEW JERSEY, U. S. A.

NATIONAL SHOWROOMS
New York City—101 Park Ave.
Entrance on 41st St.

Philadelphia
Architects Building
17th & Sansom Sts.

BRANCH OFFICES
Boston and
Chicago

EXPORT OFFICE—115 Broad Street, New York City

TE-PE-CO

ALL-CLAY
PLUMBING FIXTURES

GUARDING THEIR EYES and HEALTH

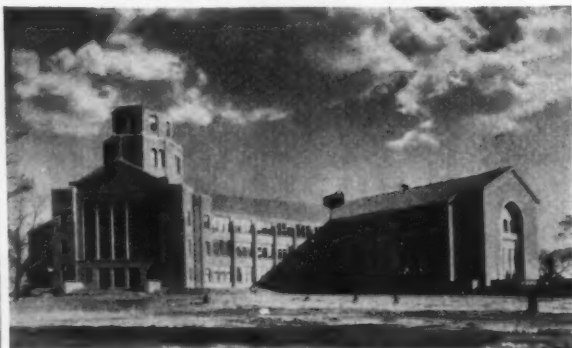


STATE building codes require a large glass area in all school rooms. Some authorities claim a soiled window reduces the incoming light by 30 to 70%. Williams Reversible Window Equipment enables both sash to be completely reversed, so that the outside of the windows are cleaned from inside the room. This safe and convenient method of cleaning assures more frequent cleaning and safeguards the pupils' eyes. Williams Pivot Sash Windows permit tilting of both upper and lower sash—so that an overhead, draftless ventilation is assured at all times. Ventilation is absolutely controlled. Send for new illustrated catalog showing widespread and repeated school use.



Monticello Jr. High School (Above)
Cleveland, Ohio
John H. Graham & Co., Architects, Cleveland, Ohio

Maine Twp. High School (Below)
Des Plaines, Ill.
John D. Chubb, Architect, Chicago, Ill.



THE WILLIAMS PIVOT SASH COMPANY
East 37th St. at Perkins Avenue
Cleveland, Ohio

For 28 years manufacturers and installers of

**WILLIAMS REVERSIBLE
WINDOW EQUIPMENT**
Clean Your Windows from the Inside



A HOFFMAN engineer will show you how controlled heat saves fuel, assures comfort

Leading architects strongly recommend Hoffman Controlled Heat for its flexible, automatic operation . . . maintenance superintendents for its fuel economy and trouble-free service.

So don't decide on a heating system until you have talked with a Hoffman heating engineer.

Hoffman Controlled Heat is a modern vapor-vacuum system, providing ample heat on extremely low steam pressures. It is a fuel saver, since obviously less fuel is required to produce ounces of pressure than pounds.

This system assures a uniform distribution of heat—a feature highly important in schools. Every radiator, regardless of size or distance from the boiler, heats quickly and evenly . . . no cold or over-heated rooms. The even, constant temperature thus provided by Hoffman Controlled Heat makes it an ideal installation for school heating.



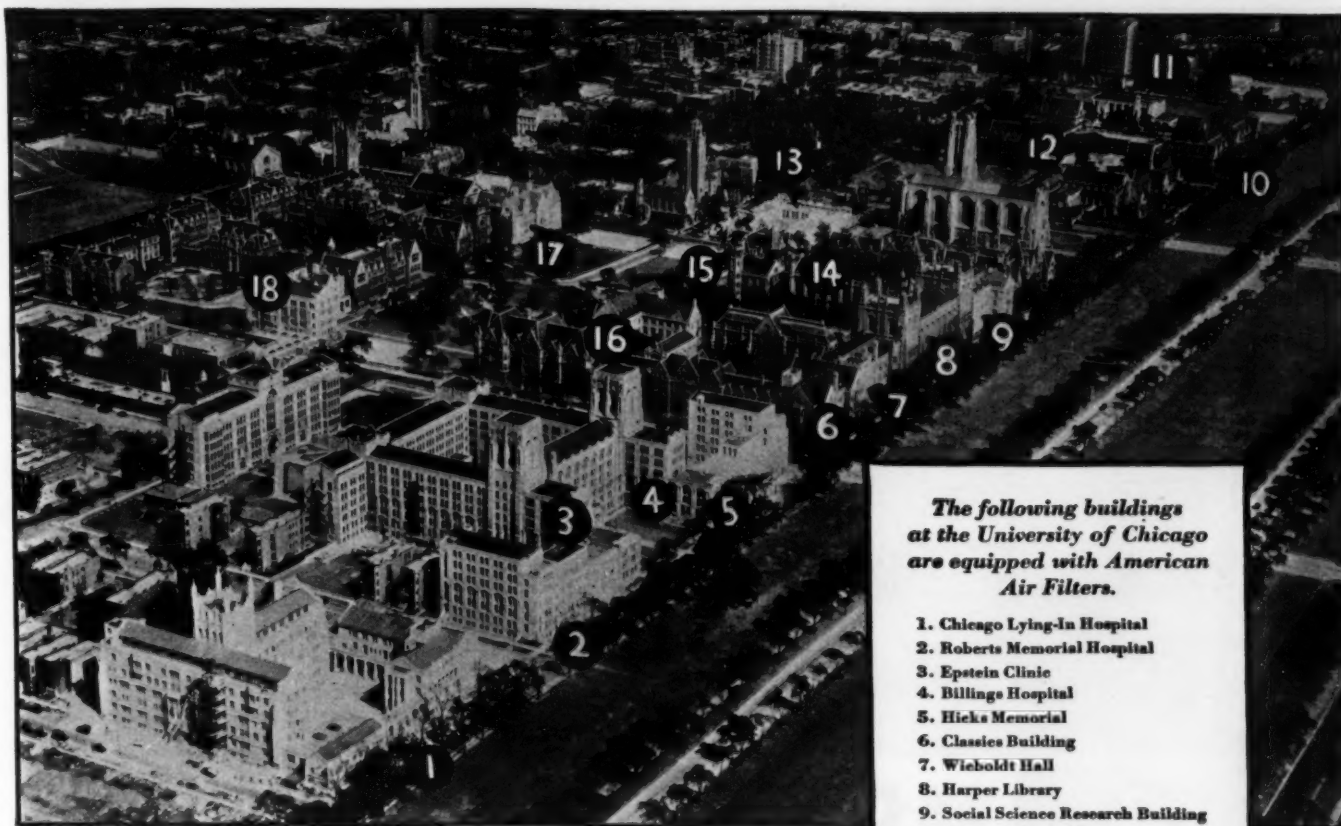
FINGER TOUCH heat regulation

The Hoffman Modulating Valve at each radiator permits room-by-room temperature control. By turning the valve lever, you can have any degree of heat desired . . . without effecting the temperature in other rooms.

Write for Complete Information

Our booklet explains why Hoffman Controlled Heat is highly desirable from the standpoint of health, comfort and economy. Send for it today. Hoffman Specialty Company, Inc., Dept. AS-10 Waterbury, Conn.

HOFFMAN Controlled HEAT
Also makers of Hoffman Venting Valves and Hoffman-Economy Pumps



UNIVERSITY OF CHICAGO

*The following buildings
at the University of Chicago
are equipped with American
Air Filters.*

1. Chicago Lying-In Hospital
2. Roberts Memorial Hospital
3. Epstein Clinic
4. Billings Hospital
5. Hicks Memorial
6. Classics Building
7. Wieboldt Hall
8. Harper Library
9. Social Science Research Building
10. Emmons Blaine Hall
11. Sunny Gymnasium
12. Graduate Education Building
13. Oriental Institute
14. Law School
15. Rosenwald Hall
16. Bond Chapel
17. Eckhart Hall
18. Jones Laboratory

CHICAGO
AERIAL SUR-
VEY CO.

Demands Clean Air★

★ Eighteen of these beautiful buildings at the University of Chicago are equipped with American Air Filters in line with the aggressive spirit of striving for the best that has built this notable institution of learning on land that 40 years ago was a swamp.

With American Air Filters, Chicago reduces its maintenance costs on furnishings and decorations; protects its equipment from the expen-

sive destruction of dust and dirt; safeguards its students and professors against the reduction in efficiency and attendance that comes with stale, germ-laden air.

Send for facts and figures on savings that are being made by American Air Filters in schools, hospitals, hotels, department stores, public buildings and factories where sanitary products or costly machinery must be protected.

AMERICAN AIR FILTER COMPANY, Inc.

108 Central Avenue, Louisville, Kentucky

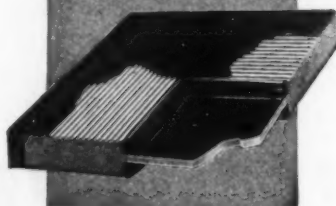
In Canada, MIDWEST CANADA LTD., Montreal, P. Q.

AMERICAN **AIR** FILTERS

32-door FoldeR-Way installation at Jefferson Junior High School, Jamestown, N. Y. Auditorium and gymnasium are separated by two batteries of 16 doors each, enabling both rooms to be used simultaneously if desired; or providing a stage of three sizes



FoldeR-Way doors are Standard Equipment for Schools



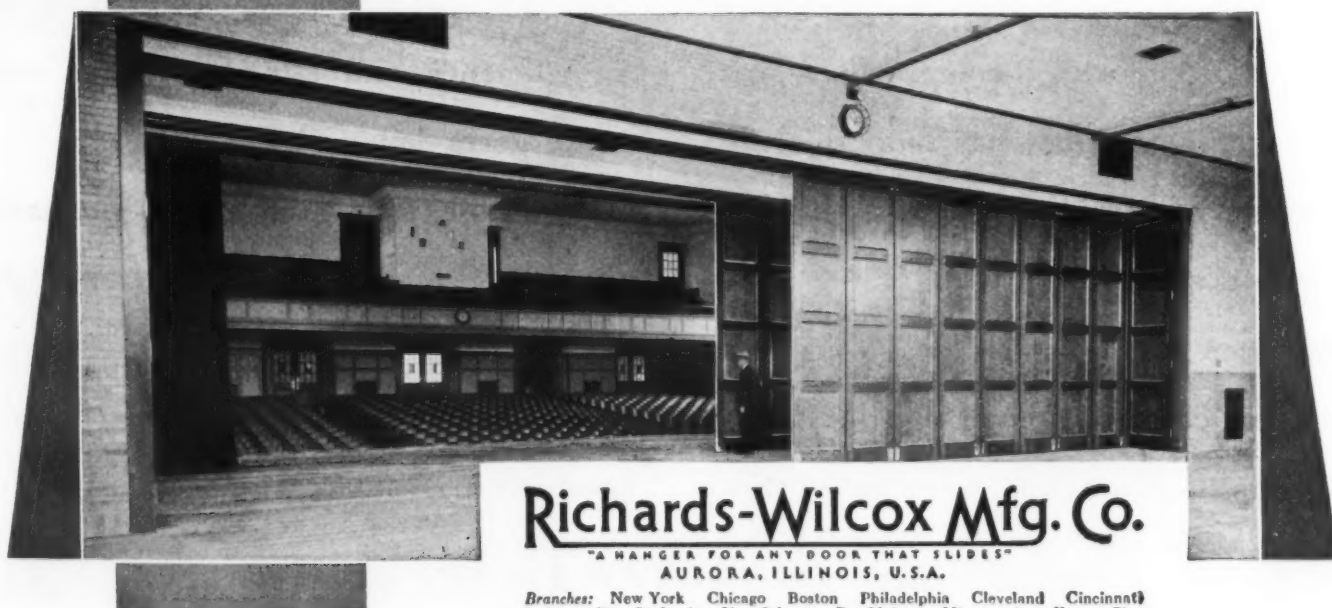
The beauty and smooth operation of R-W Compound Key Veneered doors are lasting. Sagging, warping, swelling, shrinking are practically eliminated by tongue and groove method of applying veneer. These famous doors are now made exclusively and sold only by R-W for FoldeR-Way partitions

Wherever they need large openings and disappearing partitions, the specifications should call for R-W FoldeR-Way equipment. The bigger the opening, the greater the need for FoldeR-Way partition doors. So imperative are silence and smooth, easy, trouble-free operation that nothing less efficient than FoldeR-Way equipment is either practical or economical.

R-W school equipment includes school wardrobes of every size and design; hardware for every door that slides; and R-W Compound Key Veneered Doors, specially manufactured for FoldeR-Way installations.

Consult an R-W engineer about any doorway problem. Send today for illustrated Catalog No. 43.

52
1880 1932



Richards-Wilcox Mfg. Co.

"A HANGER FOR ANY DOOR THAT SLIDES"
AURORA, ILLINOIS, U.S.A.

Branches: New York Chicago Boston Philadelphia Cleveland Cincinnati
Indianapolis St. Louis New Orleans Des Moines Minneapolis Kansas City
Los Angeles San Francisco Omaha Seattle Detroit Atlanta
Richards-Wilcox Canadian Co., Ltd., London, Ont. Montreal Winnipeg



Make convening *convenient* . . .

Many footsteps, many minutes saved!

The principal calls the whole school

to attention on a moment's notice, speaks in every



room at the same time *yet never leaves his desk.* He can do this with the Western Electric Public

Address System which picks up, amplifies and distributes speech. It is in use in numerous ways in

hundreds of schools for fire drills, gym lessons, announcements and, when a Western Electric radio

receiver and a Music Reproducer are added, for educational broadcasts and music study.



50 years of Bell telephone making experience vouch for the equipment's performance.

Western Electric

PUBLIC ADDRESS AND MUSIC REPRODUCING SYSTEMS

Distributed by GRAYBAR Electric Company

GRAYBAR ELECTRIC CO.
Graybar Building, New York, N. Y.

ASB 1-32

Gentlemen: Please send us the story of the
Public Address System.

NAME.....

ADDRESS.....

CITY.....STATE.....

School Architects Directory

F. E. BERGER R. L. KELLEY
ARCHITECTS
Specialists Educational Buildings
LINCOLN BUILDING, CHAMPAIGN, ILL.

HOWARD W. CUTLER
Specialist in
School Planning and Construction
1108-16th St., N. W. Washington, D. C.

ROBERT M. HYDE
ARCHITECT
8 So. Dearborn St. Chicago, Ill.

BLEY & LYMAN
School Architects
505 Delaware Ave. Buffalo, N. Y.

MARTIN J. GEISE, Architect
I make a Specialty of Designing School Buildings in
Illinois, Iowa, and Missouri. Over 20 Years Experience.
QUINCY, ILL. AND KEOKUK, IOWA
8th and Main Sts. State Central Saving Bank
Building, 6th and Main

WM. B. ITTNER, Inc.
Fellow, American Institute of Architects
Superior Architectural and
Engineering Service Rendered
20th Floor, Continental Life Building
3615 Olive St., St. Louis, Mo.

BONSACK & PEARCE INC.
WILL MAKE SURVEY OF YOUR NEEDS
Complete Architectural & Engineering
Services by School Specialists
411 Olive Street St. Louis, Mo.

ROBERT R. GRAHAM
REGISTERED ARCHITECT
States of New York—New Jersey—Pennsylvania.
Member—N. Y. Chapter American Institute of Archts.
Complete Architectural Service on School Bldgs.
—Consultations—
25 Prospect St. Middletown, N. Y.

LEE & HEWITT
MEMBERS, AM. SOC. C. E., MEMBERS, A. I. A.
152 Market St. 53 Park Place
PATERSON, N. J. NEW YORK, N. Y.
Specialists in School Design,
Construction and Equipment

HARRY E. BOYLE & CO.
Architects and School Specialists
EVANSVILLE, IND.
Twenty Years Practical Experience
Registered in Indiana, Illinois, Tennessee

FRANK B. GRAY
ARCHITECT
School Specialist
73 S. LA SALLE ST. AURORA, ILL.

Joseph C. Llewellyn F.A.I.A. Ralph C. Llewellyn M.W.S.E. and A.I.A.
JOS. C. LLEWELLYN CO.
ARCHITECTS and ENGINEERS
38 S. Dearborn St. Chicago

CLARENCE WILSON BRAZER
REGISTERED ARCHITECT
Advisor to National Advisory Council on
School Building Problems
421 Market St. 232 Madison Ave.
Chester, Pa. New York City

GUILBERT & BETELLE
Architects
Chamber of Commerce Building
Newark, New Jersey

Edgar E. Lundeen, A.I.A. Philip R. Hooton, A.I.A.
Archie N. Schaeffer, A.I.A. Edwin Roozen
Registered Architects
Lundeen, Hooton, Roozen & Schaeffer
ARCHITECTS
7th Floor Peoples Bank Building
BLOOMINGTON, ILLINOIS

T. H. BUELL & CO.
ARCHITECTS
U. S. National Bank Building DENVER, COLO.

HACKER & HACKER
ARCHITECTS
SCHOOL SPECIALISTS
Fort Lee Trust Building, Fort Lee, N. J.
at the Plaza — Hudson River Bridge to New York City.

MALCOMSON and HIGGINBOTHAM
and TROUT
A. W. Balle, Associate
ARCHITECTS and ENGINEERS
6th Floor, Malcomson Bldg. Detroit, Michigan

CARL W. CLARK A. I. A.
Savings Bank Building Cortland, N. Y.
Architect
Consultant and Plan Advisor—Mr. Frank H. Wood,
former Director, Division of School Buildings and
Grounds, New York State Department of Education.
New York Office—Suite 1432-33 W. 42nd St.

Wm. G. Herbst, A. I. A. E. O. Kuenzli, A. I. A.
HERBST and KUENZLI
ARCHITECTS
Educational and Public Buildings
1249 North Franklin Place Milwaukee, Wis.

MCGUIRE & SHOOK
ARCHITECTS
Specialists in Design of Educational Buildings
Consulting Service to School Officials
1400-1401-1402 Fletcher Trust Building
INDIANAPOLIS, INDIANA

COFFIN & COFFIN
ARCHITECTS
522 FIFTH AVENUE
NEW YORK CITY

THOMAS K. HENDRYX, A.I.A.
ARCHITECT
Bradford, Penna.
Registered in Pennsylvania and New York

PERKINS, CHATTEN & HAMMOND
SCHOOL ARCHITECTS
MURRAY A. DALMAN,
EDUCATIONAL CONSULTANT
160 North LaSalle Street Chicago, Illinois

FRANK IRVING COOPER CORPORATION
ARCHITECTS ENGINEERS
SPECIALIZING IN SCHOOLHOUSE PLANNING
47 Winter St., Boston, Massachusetts

WARREN S. HOLMES COMPANY
Architects and Engineers
Specializing in School and College Buildings
CHICAGO LANSING, MICHIGAN BOSTON

C. Godfrey Poggi
and
William B. Bragdon
ARCHITECTS
Elizabeth, New Jersey

EQUIPPED THROUGHOUT WITH SLOAN FLUSH VALVES



WALNUT HILLS HIGH SCHOOL CINCINNATI, OHIO

WALNUT HILLS HIGH SCHOOL
Cincinnati, Ohio

ARCHITECTS

Garber and Woodward
Cincinnati, Ohio

FIXTURES

John Douglas Company
Cincinnati, Ohio

PLUMBING CONTRACTOR

John J. Vogelpohl Co.
Cincinnati, Ohio

WHY have Sloan Flush Valves attained such an amazing popularity?

In what respect do they differ from any other valve which will flush a fixture?

The answer is to be found in twenty-five years of specialization by men who know their business. Manufacturing flush valves *exclusively*, the Sloan organization has acquired a knowledge of flush valve requirements and a breadth of flush valve experience which are unique and unapproachable.

[[Sloan offices in all principal cities are at your disposal to give complete information on school flushing equipment . . . Call our nearest branch or write to 4300 West Lake Street, Chicago]]

SLOAN VALVE CO • CHICAGO

School Architects Directory

H. D. Rawson A.I.A.
H. Clark Souers A.I.A.
Oren Thomas A.I.A.

**PROUDFOOT, RAWSON, SOUERS
& THOMAS**

School Architects
Hubbell Building Des Moines, Iowa

ERNEST SIBLEY & GEORGE M. CADY
ARCHITECTS

Palisade, N. J. Litchfield, Conn.

HENRY R. HOWLAND
CONSULTING ENGINEER

101 Park Ave., New York City

CHARLES L. TROUTMAN

Registered Architect and Engineer
School Specialist

410 American Trust Building Evansville, Ind.

RASMUSSEN & WAYLAND

ARCHITECTS

36 WEST 47th STREET
NEW YORK CITY

SMITH & STICKNEY

Registered Architects

Specializing in Schoolhouse Planning

217 East Avenue Stone 2057 Rochester, N. Y.

HENRY H. TURNER, A. I. A.

SCHOOL ARCHITECTS
Established 1909

Michigan Trust Building

GRAND RAPIDS, MICHIGAN

A. W. E. SCHOENBERG

ARCHITECT

OLEAN, N. Y.

STARRETT AND VAN VLECK

ARCHITECTS

Equitable Life Building
393 Seventh Avenue, New York, N. Y.

H. J. VAN RYN, A.I.A. G. J. DE GELLEKE, F.A.I.A.

VAN RYN & DE GELLEKE

ARCHITECTS

Fourteen Years-Architect School Board, Milwaukee, Wis.
152 WISCONSIN AVE. MILWAUKEE, WIS.

JOHN A. SCRIBBINS

ARCHITECT
GLENCOE, ILLINOIS

Specializing in Educational Buildings
331 Park Avenue Phone Glencoe 224

TOOKER & MARSH

ARCHITECTS

101 Park Ave. New York City, N. Y.

WELLS AND HUDSON

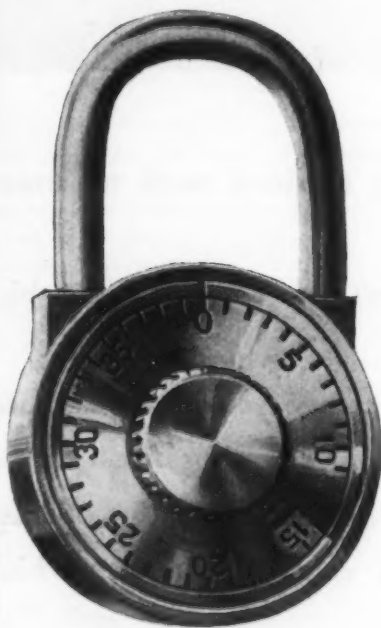
ARCHITECTS & ENGINEERS

Hanover - New Hampshire

Presenting the

BARRETT AUTOMATIC

The Perfect Automatic Keyless Lock



As a result of the accomplishment of the most outstanding achievement of the Keyless Lock Industry, the perfecting of a springless automatic padlock, you can now procure that which you have long awaited, PERFECTED AUTOMATIC LOCKING as embodied in the BARRETT AUTOMATIC KEYLESS LOCK!

Just think! When the shackle of the Barrett Automatic Keyless Lock is inserted into place it automatically throws the combination off position, thus securing the lock and making it necessary to reset the entire combination before the lock can again be opened. And the most remarkable feature about this is that it is accomplished without the aid of a single spring.

Broken springs mean financial loss to yourself and students, in addition to the interruption of routine. Avoid these unpleasant experiences by specifying the springless, trouble-proof BARRETT AUTOMATIC KEYLESS LOCK.

Automatic locking is not the only outstanding feature of this perfect lock. It has a double locking arrangement that secures both ends of the shackle, adding greatly to its strength and durability. It cannot be turned off combination while open and it contains the least number of parts that could be used to make a strong, substantial lock of this character.

Of simple, yet lasting construction, the Barrett Automatic Keyless Lock is unconditionally guaranteed against all defects over a FIVE year period.

School officials may have a sample of this PERFECT lock upon written request.

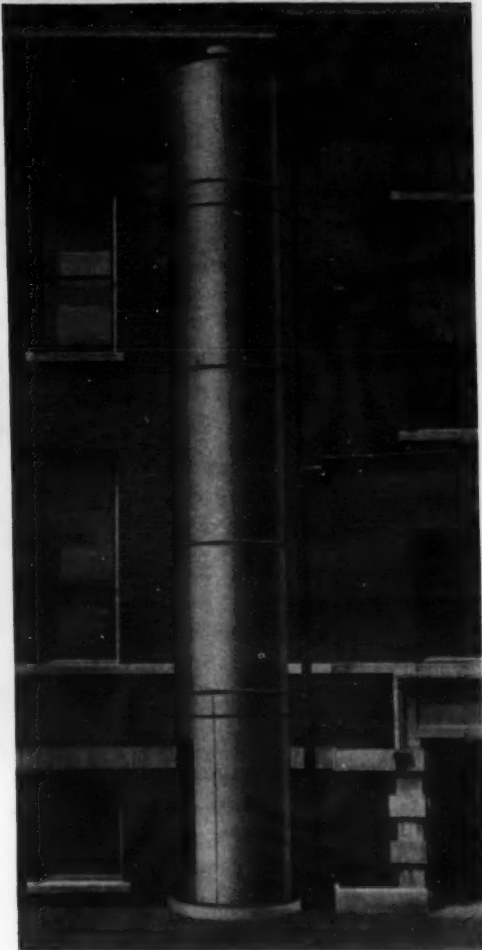
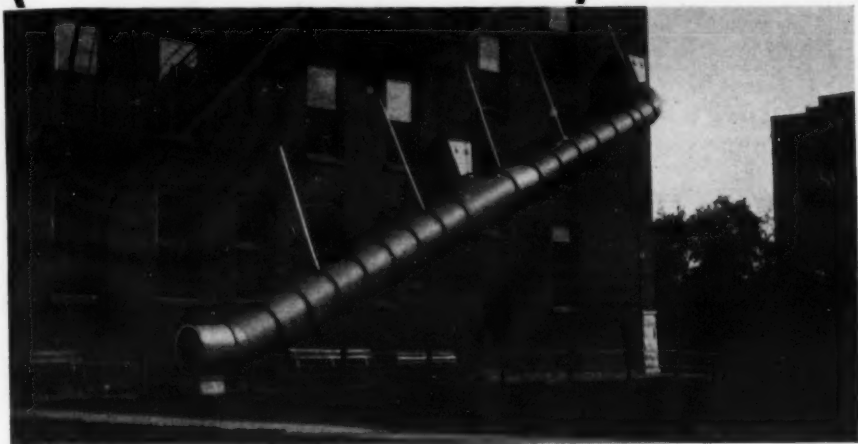
See the Barrett Automatic Display, Booth 369,
N. E. A. Convention, Washington, D. C.

BARRETT AUTOMATIC KEYLESS LOCK CO.

Department F, UPPER DARBY, PA.

EVERY WELL PLANNED SCHOOL BUILDING INSURES THE UTMOST SAFETY AND COMFORT FOR SCHOOL CHILDREN

BUTLER SPIRAL AND TUBULAR FIRE ESCAPES



QUICK, SURE, SAFE SLIDES TO SAFETY

The safety of school children is indeed a grave responsibility. The school building that does not insure the utmost safety is not so well planned. Fire insurance policies are invariably taken on school buildings of the most thoroughly modern fire-proof construction. Why? Because everyone knows and recognizes that the possibility of fire always exists. As long as there is a possibility of fire loss there is also the risk of the far more tragic loss of life—if not

from fire itself then from smoke, gases and worst of all PANIC.

It is of much greater importance to insure against loss of life than against damage to or loss of buildings. These can be repaired or replaced. Who can restore a life?

Above all else insure the utmost safety to your school children. With fire-proof buildings? Yes. With fire drills? Yes. And with escapeways that facilitate quick, sure, safe

rescue. Butler Spiral and Tubular Fire Escapes are the most highly developed of this type. Their quick acting, easy to use, patented panic-proof entrance doors are located on floor level and pass through outside walls. Their fully-enclosed slides receive and discharge children at the rate of 120 per minute protected all the way from fire, smoke gases, snow and ice. No panic-inciting slowness. No stumbling, falling, piling up or crushing. Discipline, instinct and confidence are co-ordinated to thwart panic—effect a quick, safe slide to safety.

In many states Butler Tubular Fire Escapes are replacing outside stairway types—supplementing inside tower stairway types. Butler Spiral Fire Escapes are available for outside installation on existing school buildings and inside installation on new school buildings in 50% less space than required for tower stairways. A unique, banked spiral discharges at the bottom at no greater speed than that attained 12 feet below the top entrance. Collaboration with architects and engineers heartily extended. Drafting room standards furnished on request.



SAVES 25% TO 50% OF FUEL BILL—GIVES UNIFORM AUTOMAT- IC SCHOOL HEATING

Next in importance to the safety of school children is their health. Erratic room temperature is an insidious health hazard—a discomfort that cuts down student efficiency. There is little excuse for tolerating it now that coal, the safe and economical fuel, has been made an automatic fuel. In the Butler Automatic Coal Stoker it responds readily to a dual system of electrical and thermostatic controls to maintain uniform room temperatures within a degree or two of any desired thermostat



setting. A patented unit of the control system maintains a minimum fire bed in mild weather—or overnight, ready for quick heating next morning.

Not only does the Butler Coal Stoker burn coal automatically—it burns low priced stoker coal. Its highly developed underfeed and forced draft attains maximum combustion efficiency, eliminates smoke and leaves a minimum of ashes or clinker. Installations of the Butler Coal Stoker in school heating plants are cutting fuel bills from 25 to 50 per cent. A Butler heating engineer will estimate the fuel savings you can effect. No obligation. Send the coupon for full information.

BUTLER MANUFACTURING COMPANY

1255 Eastern Ave.
Kansas City, Mo.

955 Sixth Ave., S. E.
Minneapolis, Minn.

Address inquiries to nearest office

Send complete information on Butler () Tubular, () Spiral Fire Escapes; Butler () Automatic Coal Stoker; Butler () Super-Ser Tanks. Also explain your free survey service.

Name..... Title.....

Address.....

City..... State.....

School Architects Directory

H. D. Rawson A.I.A.
H. Clark Souers A.I.A.
Oren Thomas A.I.A.

**PROUDFOOT, RAWSON, SOUERS
& THOMAS**

School Architects
Hubbell Building Des Moines, Iowa

ERNEST SIBLEY & GEORGE M. CADY
ARCHITECTS

Palisade, N. J. Litchfield, Conn.

HENRY R. HOWLAND
CONSULTING ENGINEER

101 Park Ave., New York City

CHARLES L. TROUTMAN

Registered Architect and Engineer
School Specialist

410 American Trust Building Evansville, Ind.

RASMUSSEN & WAYLAND

ARCHITECTS

36 WEST 47th STREET
NEW YORK CITY

SMITH & STICKNEY

Registered Architects

Specializing in Schoolhouse Planning

Stone 2057
217 East Avenue Rochester, N. Y.

HENRY H. TURNER, A. I. A.

SCHOOL ARCHITECTS
Established 1909

Michigan Trust Building

GRAND RAPIDS, MICHIGAN

A. W. E. SCHOENBERG

ARCHITECT

OLEAN, N. Y.

STARRETT AND VAN VLECK

ARCHITECTS

Equitable Life Building
393 Seventh Avenue, New York, N. Y.

H. J. VAN RYN, A. I. A. G. J. DE GELLEKE, F. A. I. A.

VAN RYN & DE GELLEKE

ARCHITECTS

Fourteen Years-Architect School Board, Milwaukee, Wis.
152 WISCONSIN AVE. MILWAUKEE, WIS.

JOHN A. SCRIBBINS

ARCHITECT

GLENCOE, ILLINOIS

Specializing in Educational Buildings

331 Park Avenue Phone Glencoe 224

TOOKER & MARSH

ARCHITECTS

101 Park Ave. New York City, N. Y.

WELLS AND HUDSON

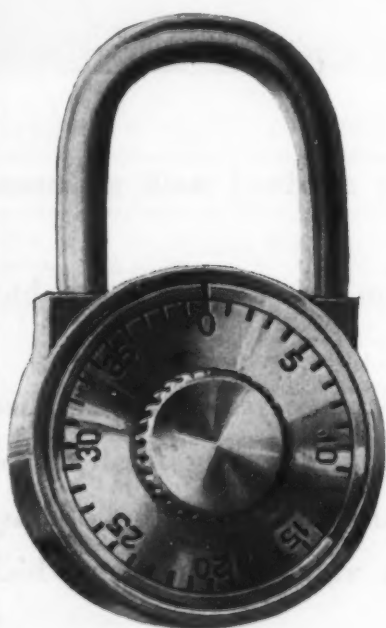
ARCHITECTS & ENGINEERS

Hanover - New Hampshire

Presenting the

BARRETT AUTOMATIC

The Perfect Automatic Keyless Lock



As a result of the accomplishment of the most outstanding achievement of the Keyless Lock Industry, the perfecting of a springless automatic padlock, you can now procure that which you have long awaited, PERFECTED AUTOMATIC LOCKING as embodied in the BARRETT AUTOMATIC KEYLESS LOCK!

Just think! When the shackle of the Barrett Automatic Keyless Lock is inserted into place it automatically throws the combination off position, thus securing the lock and making it necessary to reset the entire combination before the lock can again be opened. And the most remarkable feature about this is that it is accomplished without the aid of a single spring.

Broken springs mean financial loss to yourself and students, in addition to the interruption of routine. Avoid these unpleasant experiences by specifying the springless, trouble-proof BARRETT AUTOMATIC KEYLESS LOCK.

Automatic locking is not the only outstanding feature of this perfect lock. It has a double locking arrangement that secures both ends of the shackle, adding greatly to its strength and durability. It cannot be turned off combination while open and it contains the least number of parts that could be used to make a strong, substantial lock of this character.

Of simple, yet lasting construction, the Barrett Automatic Keyless Lock is unconditionally guaranteed against all defects over a FIVE year period.

School officials may have a sample of this PERFECT lock upon written request.

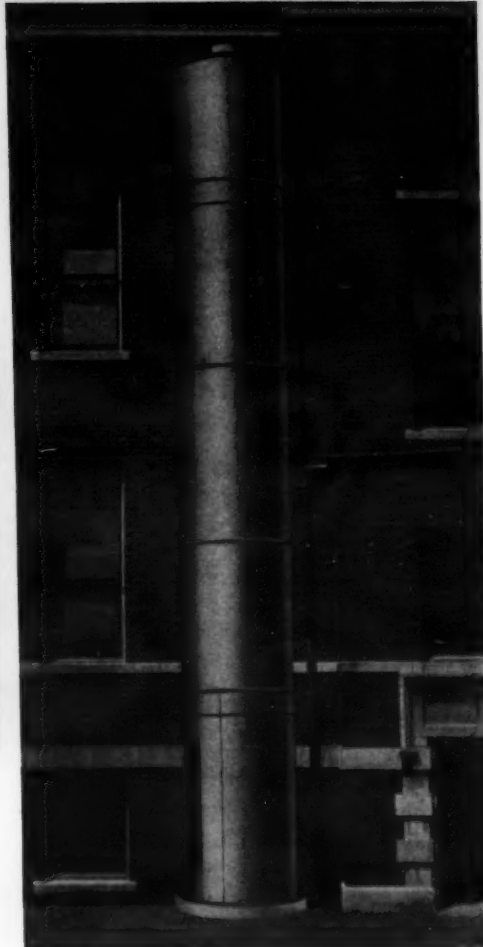
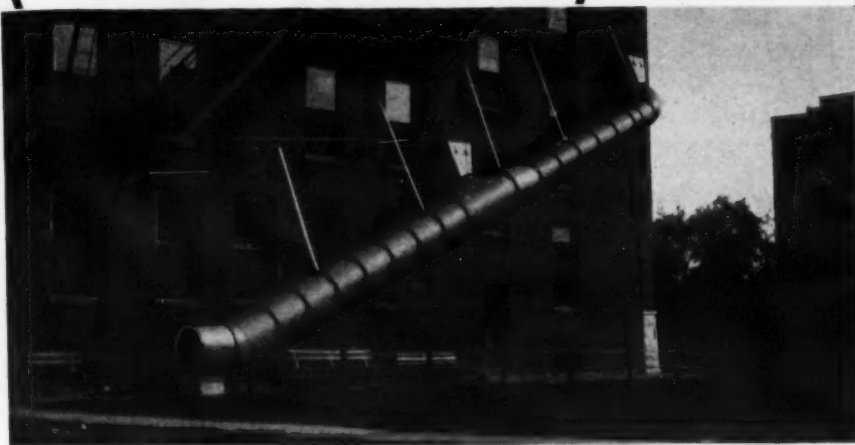
See the Barrett Automatic Display, Booth 369,
N. E. A. Convention, Washington, D. C.

BARRETT AUTOMATIC KEYLESS LOCK CO.

Department F, UPPER DARBY, PA.

EVERY WELL PLANNED SCHOOL BUILDING INSURES THE UTMOST SAFETY AND COMFORT FOR SCHOOL CHILDREN

BUTLER SPIRAL AND TUBULAR FIRE ESCAPES



QUICK, SURE, SAFE SLIDES TO SAFETY

The safety of school children is indeed a grave responsibility. The school building that does not insure the utmost safety is not so well planned. Fire insurance policies are invariably taken on school buildings of the most thoroughly modern fire-proof construction. Why? Because everyone knows and recognizes that the possibility of fire always exists. As long as there is a possibility of fire loss there is also the risk of the far more tragic loss of life—if not

from fire itself then from smoke, gases and worst of all PANIC.

It is of much greater importance to insure against loss of life than against damage to or loss of buildings. These can be repaired or replaced. Who can restore a life?

Above all else insure the utmost safety to your school children. With fire-proof buildings? Yes. With fire drills? Yes. And with escapeways that facilitate quick, sure, safe

rescue. Butler Spiral and Tubular Fire Escapes are the most highly developed of this type. Their quick acting, easy to use, patented panic-proof entrance doors are located on floor level and pass through outside walls. Their fully-enclosed slides receive and discharge children at the rate of 120 per minute protected all the way from fire, smoke gases, snow and ice. No panic-inciting slowness. No stumbling, falling, piling up or crushing. Discipline, instinct and confidence are co-ordinated to thwart panic—effect a quick, safe slide to safety.

In many states Butler Tubular Fire Escapes are replacing outside stairway types—supplementing inside tower stairway types. Butler Spiral Fire Escapes are available for outside installation on existing school buildings and inside installation on new school buildings in 50% less space than required for tower stairways. A unique, banked spiral discharges at the bottom at no greater speed than that attained 12 feet below the top entrance. Collaboration with architects and engineers heartily extended. Drafting room standards furnished on request.



SAVES 25% TO 50% OF FUEL BILL—GIVES UNIFORM AUTOMAT- IC SCHOOL HEATING

Next in importance to the safety of school children is their health. Erratic room temperature is an insidious health hazard—a discomfort that cuts down student efficiency. There is little excuse for tolerating it now that coal, the safe and economical fuel, has been made an automatic fuel. In the Butler Automatic Coal Stoker it responds readily to a dual system of electrical and thermostatic controls to maintain uniform room temperatures within a degree or two of any desired thermostat



setting. A patented unit of the control system maintains a minimum fire bed in mild weather—or overnight, ready for quick heating next morning.

Not only does the Butler Coal Stoker burn coal automatically—it burns low priced stoker coal. Its highly developed underfeed and forced draft attains maximum combustion efficiency, eliminates smoke and leaves a minimum of ashes or clinker. Installations of the Butler Coal Stoker in school heating plants are cutting fuel bills from 25 to 50 per cent. A Butler heating engineer will estimate the fuel savings you can effect. No obligation. Send the coupon for full information.

BUTLER MANUFACTURING COMPANY

1255 Eastern Ave.
Kansas City, Mo.

955 Sixth Ave., S. E.
Minneapolis, Minn.

Address inquiries to nearest office

Send complete information on Butler () Tubular, () Spiral Fire Escapes, Butler () Automatic Coal Stoker, Butler () Super-Septic Tanks. Also explain your free survey service.

Name..... Title.....

Address.....

City..... State.....



Large photo shows disappearing door type Wilson Wardrobes open. Top inset shows doors closed, fitted with blackboards. Lower inset shows doors open, projecting only 2 1/2" into aisle.

Features of Wilson School Wardrobes That Save Space and Money—

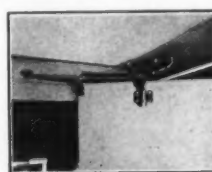
Pictures show installation of Wilson Hygienic School Wardrobes (disappearing door type) in South Norfolk High School, South Norfolk, Va., W. O. Sherman, Architect, J. W. Hudson Jr., Contractor.

These wardrobes eliminate space and cost of cloak rooms. May be installed in corridors or rooms. Fronts operate easily and out of the way, whether open or closed, in both the disappearing door type and the rolling front type. Provided with blackboard surface if desired. Wilson Hygienic School Wardrobes permit smaller school buildings without loss of seating capacity, thereby lowering construction costs.

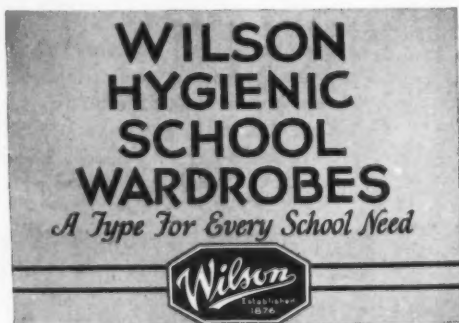
Write for Catalog No. 14-W



Umbrella racks with drip pan may be attached to disappearing door type wardrobes.



Detail of top track showing ease and sturdiness of operation. All hardware made in our plant.



The J. G. Wilson Corporation

11 East 38th St., New York—Box 1194, Norfolk, Va.

Offices in All Principal Cities

OVER 50 YEARS IN BUSINESS



**Whether it's
a new building...
or a teacher's desk**

... DEMAND QUALITY MATERIALS
AS WELL AS LOW COST ... LONG
SERVICE AS WELL AS ECONOMY ...

THREE fundamental requirements should govern every school expenditure:

- (1) *Economy*—both in original purchase price and ultimate cost-per-year;
- (2) *Sturdy construction* from high-grade materials; and
- (3) *Long, satisfactory service.*

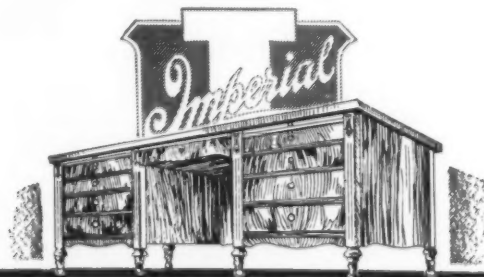
These specifications are just as vital in the selection of new equipment as they are in the planning of new buildings.

It is not surprising, therefore, that school executives, over a long period of years, have shown a distinct preference for Imperial Teachers' Desks—

Because they are *built right* for long life and trouble-free service—*priced right* for practical economy.

What you pay for your Imperial Teachers' Desks depends largely upon the finish you select. The Imperial line can be furnished in Plain Oak, Quartered Oak, Mahogany and Walnut—a desk for every budget requirement.

The Imperial catalog of Teachers' Desks, Classroom and Library Tables, Office Desks and Chairs will be sent to you through our nearest distributor immediately upon request.



IMPERIAL DESK COMPANY
EVANSVILLE • INDIANA

MAKE YOUR SCHOOL MODERN with Modern Seating



Typewriter Desk

A tilting top for the typewriting department provides comfort and correct posture. Turn the top down and go on with work.



Study Top Model

The standard top can be substituted with a top without book receptacle, making an ideal desk for high school and study hall purposes.



Level Top

A simple device for attaching beneath the lid, holds it level. Front feet are placed to permit two or more desks to face together for group study.



Standard Type

The all-purpose desk. Insures comfortable, correct posture. Various adjustments, attachments and devices quickly adapt it to any school use.



With Book Support

By exchanging the pencil rail, the special book support extension quickly converts the standard model to an eye conservation desk.

Comfort for Cripples
This is the standard Universal with various attachments which may be purchased separately to fit the physical fault of the pupil.

6 ways this ① all-purpose desk can serve in every school

YOUR school is as modern as its equipment. For, after all, pupil-efficiency is proportionate to the efficiency of the desks at which they work.

Today . . . superintendents, principals, and other educational executives know that proper seating is a definite factor in the physical development . . . and therefore in the mental development . . . of every pupil.

American Seating Company school seats are the product of scientific research . . . years of specialized experience . . . in the needs of today's classroom. Our latest product . . . the American All-Purpose Universal Desk, is an outstanding example of our contribution to a finer, brighter future for America's school children. With posture-correctness, it incorporates features that are new, distinctive . . . yet

immediately recognizable as *superior* in seating for progressive, modern schools.

Free poster on posture

To help remind pupils to always sit erect—to focus their attention on the benefits

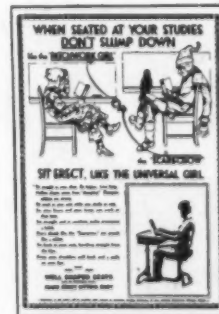
of correct sitting posture . . . we have prepared an attractive 3 color poster (see illustration) suitable for hanging in the classroom. It measures 17½ inches by 25 inches—so it can be read easily from the back of the room. 60,000 have already been sent to schools the country over . . . are hanging in classrooms, daily reminding pupils to sit erect. Teachers

and educators who send in the coupon will be furnished with a poster for each classroom, *free*. Upon request, several authoritative booklets on posture and seating will also be included. Please use the coupon.

6 Flexible Features

Note how 6 features make the "American" Universal the outstanding all-purpose desk of all time.

- 1 Book Support**—A special book support extension—quickly converting the standard model to an eye conservation desk.
- 2 Level Top**—A simple device attached below the lid holds it at a level. Especially desirable for group study or socialized recitation.
- 3 Typewriter Desk**—A tilting top for use in the typewriting department. Turn the top down—and it's set for study or work.
- 4 Comfort for Cripples**—Various attachments purchased separately as required, to fit the physical fault of the pupil.
- 5 Study Hall Top**—In place of the standard top, a top without book receptacle can be substituted. Ideal for high school and study hall purposes.
- 6 Standard Type**—For all round school use. As indicated in illustrations, various adjustments, attachments and devices quickly adapt it to any use.



American Seating Company

Makers of Fine Seating for Schools, Churches and Public Auditoriums

General Offices: Grand Rapids, Michigan

Branches in All Principal Cities

AMERICAN SEATING COMPANY, Grand Rapids, Michigan (ASBJ-1)
Please send me, free and without obligation, a copy of your Posture Poster on correct sitting. Principals and superintendents will be supplied with a poster for each room, on request. Please indicate the number of classrooms.

Name

Address

Position ☐ Number of classrooms
(Indicate here whether you are Superintendent, Principal or Teacher)

Today It Must Be Steel!



Fig. 484—"HALLOWELL" Bench-Leg of Steel, for steel and wood tops. Exceptionally rigid. 30 sizes.



Pat'd and Pat's Pending

Fig. 924—"HALLOWELL" Work-Bench of Steel, with laminated plank in front; angle tie bars below. Carried in stock.



Pat'd and Pat's Pending

Fig. 928—"HALLOWELL" Work-Bench of Steel, with a laminated all-wood top. Open below. Facilitates sweeping.



Pat'd and Pat's Pending

Fig. 732—General view of the "HALLOWELL" Work-Bench of Steel, with back board, end pieces, etc. Carried in stock.

We have crowded the space with pictures to show different types of "HALLOWELL" Shop Equipment of steel suitable for Vocational Education.

The Legend below each cut is self explanatory, but to fully appreciate our "HALLOWELL" Line get our

BULLETIN 433

STANDARD PRESSED STEEL CO.

BRANCHES
BOSTON
CHICAGO
DETROIT

JENKINTOWN, PENNA.
Box 553

BRANCHES
NEW YORK
SAN FRANCISCO
ST. LOUIS



If Your Students Could Choose

their chairs, would they buy on PRICE or wouldn't they be more likely to select the chairs that will give them the greatest comfort and enable them to do a better schoolday's work without fatigue?

ROYAL Chairs cost just a few cents more but they pay Bigger Dividends in the health and comfort of your students.



Ask for Our New Catalog



Royal

MOVABLE DESKS
FOLDING CHAIRS
TEACHERS' CHAIRS
STEEL STOOLS
KINDERGARTEN CHAIRS
TABLET ARM CHAIRS
SEWING ROOM CHAIRS
TYPEWRITER CHAIRS

ROYAL METAL MFG. CO.

1130 S. Michigan Blvd.
CHICAGO, ILL.

Royal Distributors Are Located in 38 States



"Official" for Schools

Seventy-eight per cent of the schools of America have selected Vul-Cot Wastebaskets as standard equipment . . . Made of Hard Vulcanized Fibre—a material that is practically indestructible . . . Solid at sides and bottom so that not even the smallest particles can sift through onto the floor . . . Guaranteed for five full years of service.

NATIONAL VULCANIZED FIBRE CO., WILMINGTON, DEL.

VUL-COT
-the national wastebasket

SERVICEABLE SCHOOL SEATING

• by

PEABODY

In line with a successful policy practiced for 30 years, Peabody's have again broadened their line of furniture for schoolroom use to meet an existing demand. The unit movable desk No. 260 with the similar classroom chairs 264 and 266 are the latest additions.

A true ball bearing seat swivel, a positive, yet simple adjustment for seat and desk height, a large roomy book box, a lifting lid that cannot slam, and special broad flat feet that will not mar soft texture floors, are a few of the features shown on the No. 260.

In all these additions to the Peabody line the outstanding aims of the designers were neatness of design, strength with grace, correct posture and comfort. An examination of one of these unit desks will convince you they fill a need in schoolroom seating.

These latest additions to the already complete line of seating have been made after a careful and extensive study of schoolroom needs. With these types special attention can be given each pupil in so far as posture, light and special habits are concerned.

The Peabody Seating Co.

North Manchester - - - - - Indiana



No. 260
Patent Applied For



No. 264
Patent Applied For

A complete line of swivel and non-swivel classroom chairs are now available. The posture back, saddle seat, true ball bearing swivels and neat attractive designs are refinements demanded by educators and furnished by Peabody.



No. 266
Patent Applied For

PETERSON

Laboratory and Library Furniture

Now, more than ever before, is quality apparent in Peterson Equipment. Correct design and scientific construction mean long years of satisfactory service. We will gladly submit specifications and quotations without obligation on your part.



1205

A dual-purpose table serving both Physics and Chemistry instruction. Ample drawer and cupboard space. Two compartments in rear for tubing, etc.

Write for Complete Laboratory and Library Catalog No. 16-A

LEONARD PETERSON & Co., INC.

Manufacturers of Guaranteed Laboratory and Library Furniture
OFFICE AND FACTORY

1222-34 Fullerton Ave., Chicago, Ill.
New York Sales Office: Knickerbocker Building, 42nd and Broadway

COMBINED WOOD AND STEEL

*Stronger Than Any
Other Chair Made!*



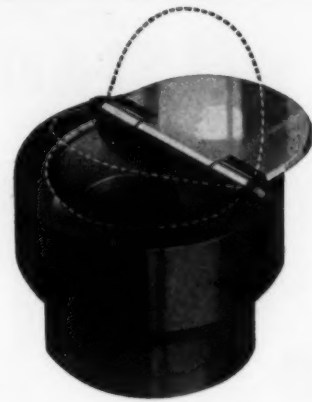
SOLID KUMFORT AND
PRESS-TOE LOCK FOLD-
ING CHAIRS FOR EVERY
PURPOSE
IN ANY
PRICE
RANGE



IDEAL FOR SCHOOL AUDI-
TORIUM AND GYMNA-
SIUM. OUTLAST ANY ALL
WOOD OR STEEL CHAIR
MADE. ASK ABOUT OUR
TAB-L-ARM FOLDING CLASS
ROOM CHAIR.

LOUIS RASTETTER & SONS CO.
1405 WALL ST., FORT WAYNE, IND.

Here is
an inkwell
with a top which
won't break off!



The metal top of this remarkable new Sengbusch inkwell opens all the way back. It does not flap back and forth. It is not subject to costly bending and breakage at the hinge.

Breakage and replacement costs are checked when this one-piece, all-hard-vulcanized-rubber inkwell is installed. Protects books, clothes, desks and floors. Easy to install.

For greater quiet in the classroom, greater savings in school operation, write for complete details about the new Sengbusch School Inkwell.

Sengbusch

SELF-CLOSING INKSTAND CO.

118 Sengbusch Bldg. Milwaukee, Wis.

MANUAL TRAINING BENCH No. 280



A GLANCE AT THIS NEW PATTERN will show that the combination of various-sized drawers and cupboard makes an unusually practical bench. Notice, especially, the small drawer which is intended to hold nails, screws, small tools, etc., which so easily become misplaced when kept with the larger tools. Being able to immediately lay hands on these small but necessary items, will be the means of saving a great deal of time, thereby promoting efficiency. Also, notice the large cupboard, which will hold such tools and materials which cannot be kept in the general or three private drawers. Bench is equipped with our Abernathy Rapid Acting Roller Nut Vise No. 70D on front, adjustable stop and dog.

THE CHRISTIANSEN CO.

Manufacturer of this line since 1898

2814-2842 West 26th St.,

Chicago, Ill.



No. 181



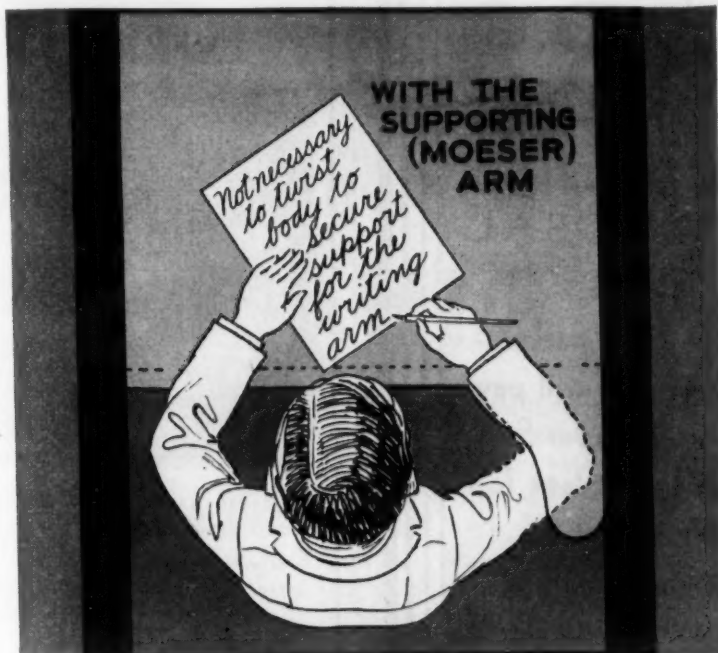
No. 141



No. 40



No. 15



WITH THE
SUPPORTING
(MOESER)
ARM

*Not necessary
to twist
body to
secure
support
for the
writing
arm*

The Moeser Arm Support is an exclusive National Desk feature. Compels correct posture, preventing spinal injury, eyestrain and fatigue. Furnished as optional with all National Desks. More complete details furnished on request.



No. 1133



No. 183



No. 131

Avoid Confusion of Ideas by Standardizing on National

The thoroughly practical principles of design and construction distinguishing National Desks and Seats, tried and proved, furnish conclusive solution of the problem of right posture, restful comfort and entire utility. Known value and known results endorse the recommendation that you standardize on National. The hazard of new theory ideas is not included, the possibility of mistaken judgment is removed and after-purchase error is obviated when you select and install National—a complete line for every school room requirement. Write now for the National School Equipment Catalog, descriptions and illustrations in detail for you to consider and compare. . .

At the Superintendence Convention at Washington, D. C.,
Visit Our Exhibit Space No. 40 in Main Exhibit Hall of
Washington Auditorium.

NATIONAL SCHOOL EQUIPMENT COMPANY
1131 Piere Street Port Washington, Wisconsin

FURNISHING EXPERT SCHOOLROOM LAYOUT and DESK
ARRANGEMENT of INVALUABLE WORTH and ADVANTAGE



No. 127

NATIONAL School DESKS
Famous for Comfort

SOLARS

ARE A NEAT, EFFICIENT
AND SANITARY METHOD
OF WASTE DISPOSAL



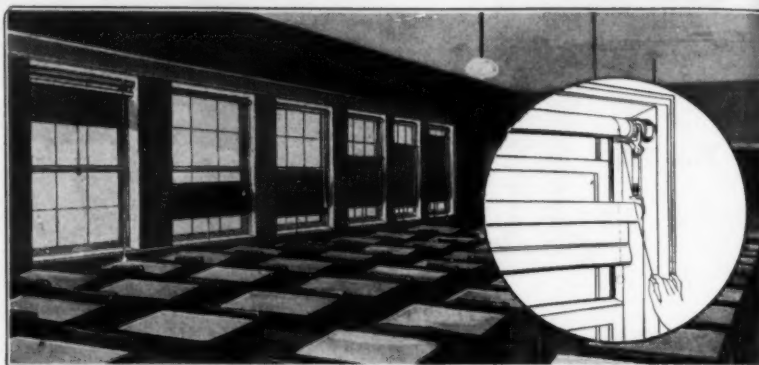
• • • And inexpensive, too. It will pay you to consider Solars in your plans for the New Year.

• • • We will gladly supply complete information upon request.

[Illustrated is No. 15, a popular model. A complete range of models and colors to select from.]

SOLAR-STURGES MFG. CO.
MELROSE PARK, ILLINOIS

Equip With Ev-El-Eth



Shades carried by the EVELETH ADJUSTERS afford a hitherto unknown degree of:

comfort to the child

Because of perfect adjustment enabling him to receive benefit of properly regulated light without danger of eye-strain.

enjoyment to the teacher

Because Ev-el-eth Adjusters operate so easily and quietly. Because they add to the tidy appearance of the room. The adjusting cord, although very strong, is light in weight and is placed inconspicuously at one side.

Because shade is held in perfectly level position at any desired height. The annoyance caused by shades tilting at various angles is unknown where Ev-el-eth level Adjusters are properly installed.

satisfaction to the School Board and Purchasing Committee

Because of moderate first cost. Because of carefully selected materials and sturdy construction assuring a long term of service. Because of the automatic hook which does away with the anchoring of cord to wall or casing.

Further information will be sent upon request.

EVELETH MFG. CO.

11 Ashland Ave. River Forest, Ill.
(Two miles west of Chicago city limits)

Manufacturers of Weather Strip Specialties and Shade Adjusters



Cut About 2/3 Actual Size
No. 9920



COMBINATION PADLOCKS

With Exclusive Features for Lockers
and Gymnasium Wire Suit Baskets

Attractively proportioned and especially designed for greater convenience and security.

Constructed of all brass or steel, black japanned, or cadmium plated.

LOCKS AUTOMATICALLY

These padlocks cannot be left unlocked because the combinations are completely thrown off when the shackles are snapped.

With every installation master charts are furnished for recording names, lock numbers and combination numbers. Inform us of your particular problem that a solution of your requirements may be determined. A sample "dial" lock will be sent gratis upon request to school executives.

Letter Boxes for Schools Key and Combination

No. 83 COMBINATION LETTER BOX
Made in 3 sizes.

Cast Bronze, regularly finished medium statuary. Dials etched, figures raised on black background. Combinations all different.

No. 1702A KEY LETTER BOX

Cast Bronze, medium statuary finish. Pin tumbler lock. 3 keys with each letter box. Key changes practically unlimited.

Size 5 1/2 x 6 1/4 inches.

All boxes furnished with pigeon holes of various depths. Send for catalogue No. 57.

Manufacturers of letter
boxes for 50 years.

CORBIN CABINET LOCK COMPANY

The American Hardware Corporation, Successors
NEW BRITAIN, CONN., U. S. A.

NEW YORK
96 LaFayette St.

CHICAGO
319 W. Randolph St.

PHILADELPHIA
405 Commerce St.



Size 3-2/3 x 5 inches.

SQUIRES INKWELLS

We manufacture the Boston Inkwell in three different styles. All have hard rubber tops and the glasses fit either style of top. These fit 1 27/32 inch holes.

SQUIRES No. 58
BOSTON INKWELL



SQUIRES No. 59
BOSTON INKWELL



SQUIRES No. 60
BOSTON INKWELL



SQUIRES No. 12
COMMON SENSE INKWELL



Our No. 12 or Common Sense Inkwell is made in three sizes, to fit holes 1 1/2", 1 3/4" or 1 7/8". Corks with Caps or Rubber Corks furnished as desired.

We make several other styles of inkwells.

Write for Catalogue, Prices, and Samples.

SQUIRES INKWELL COMPANY

Brady Bldg., Third Ave. and Ross St., PITTSBURGH, PA.

FULL BACK REST

An Exclusive Feature of the New Steel Folding Chair

the VIKING 200



COMFORTABLE
ATTRACTIVE
NON-TIPPING
LONG LASTING

The Viking 200 offers the ideal solution to your school seating problem. In this new steel folding chair are combined strength and beauty, with a luxurious seating comfort that is ordinarily found only in opera chairs and the like.

The new full back rest is a feature found exclusively in the Viking 200 steel chair and this alone effects a new seating comfort that is unsurpassed in the folding chair field.

Schools, particularly, should investigate the VIKING 200. It will help to solve many a seating problem. In addition, its exceptionally rugged construction enables it to stand up indefinitely under the abuses children heap upon it.

Investigate this new model before you buy another folding chair. The price is low—satisfaction is guaranteed.



Write for complete information.

MAPLE CITY STAMPING CO.

PEORIA, ILLINOIS

PROCRASTINATION IS THE THIEF OF TIME



\$150 F. O. B. FACTORY
Install it yourself.
It requires no servicing.

Nowhere is this old adage more true than when applied to program clock operation. The longer you put off buying program clocks for all of your schools, the more time will be lost in teaching. Every day someone is spending more than an hour in watching the clock, and the students are robbed of that much teaching time.

BUY A

MURDA

today and learn the value of a really trouble-proof program device

**"Pays for Itself
in Less Than a Year"**

Built upon a No. 86 Seth Thomas movement, the Murda Program Clock is a sturdy, dependable device which will operate automatically all the bells in the building on four separate circuits, silencing them at night and on Saturday and Sunday. No expert servicing is ever required on its simple mechanism. Initial expense is low and cost of upkeep is negligible.

Write us for descriptive literature.

THE MURPHY-DAVIS SIGNAL COMPANY, INC.
418 Kansas Avenue, Topeka, Kansas



Slatebestos Blackboards

THERE'S a distinct economy in equipping your new building with blackboards that will last as long as the building itself, and at a price that you can afford.

Specify Slatebestos for your new boards because it has a better writing surface, erases easily, is fire resistant, simple to install, and famous for long life.

Slatoplate

SLATOPLATE is the lowest priced and most economical blackboard for all purposes. Here is a blackboard that will fill your need perfectly and is guaranteed for ten years. It is famous for its smooth, velvety writing surface.

● Write today for free samples and prices of Slatebestos, Slaterock, and Slatoplate Blackboards; also Duplex (½ inch thick) and Simplex (¼ inch thick) Bulletin and Tack Boards.

Slaterock

SLATEROCK will be of special interest where funds are limited, as it is the most reasonably priced permanent blackboard made. It cannot warp, crack or buckle and lasts indefinitely.

BECKLEY-CARDY CO.

Manufacturers
17 E. 23rd Street, Chicago

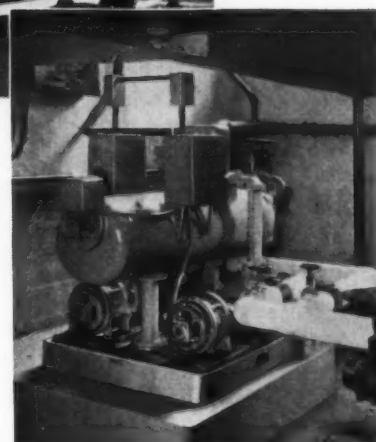
SERVING THE HEATING SYSTEM IN THIS CONNECTICUT SCHOOL



Benjamin Franklin Junior High
School, South Norwalk, Conn.

AS in many of the country's finest educational buildings, the heating system in the Benjamin Franklin Junior High School, South Norwalk, Conn., is served by a Jennings Vacuum Heating Pump.

Automatically controlled, the Jennings Pump assures the complete removal of air and condensation from the heating system. Flexibility and close control of temperatures are assured making it easy to maintain an even, healthful warmth in every classroom regardless of outside weather conditions.



Duplex Jennings Vacuum Heating
Pump installed in the Benjamin
Franklin Junior High School, South
Norwalk, Conn.



THE NASH ENGINEERING CO., 11 WILSON ROAD, SOUTH NORWALK, CONN.

Jennings Pumps

VOL. 84
No. 1

THE AMERICAN School Board Journal

JANUARY,
1932

A Periodical of School Administration

Eastern Office:
40 EAST 34TH STREET
NEW YORK, N. Y.

Published on the first day of the month by
THE BRUCE PUBLISHING COMPANY
524-544 No. Milwaukee Street, Milwaukee, Wis.

Western Office:
66 E. SOUTH WATER STREET
CHICAGO, ILL.

TABLE OF CONTENTS

LEADING ARTICLES

Ways and Means of Increasing School Facilities in Times of Business Depression.....	29
<i>James O. Betelle</i>	
Junior- and Senior-High-School Growth and Its Effect on Housing Requirements.....	32
<i>T. C. Holy</i>	
Integration of Educational and Architectural Planning Illustrated—The Copernicus Junior High School at Hamtramck, Michigan.....	36
<i>John A. Jay</i>	
Burlington Building Program Includes Junior-High-School Organization.....	40
<i>W. G. Brooks</i>	
Two Functionally Planned Elementary Schools.....	43
<i>Samuel A. Challman</i>	
One-Story Schools in a Village Program of Education.....	46
<i>J. T. P. Calkins</i>	
Economy in the Planning and Construction of School Buildings.....	49
<i>Henry J. Lehrbach</i>	
Solving Common Acoustical Problems of Schools.....	50
<i>R. L. Lindahl</i>	
Successful Use Proves School-Building Value.....	52
<i>William F. Shirley</i>	
Making New School Buildings Out of Old—The Rehabilitation of Old School Buildings in Sioux City, Iowa.....	55
<i>H. C. Roberts</i>	
Building a School to Fit a Community.....	57
Cleveland's Board-of-Education Building.....	62
<i>Annette Smith</i>	
The High-School Cafeteria.....	68
<i>Rhue E. Green</i>	
The New Education Building for Pennsylvania.....	70
The School Superintendent and the New Building Program.....	80
<i>Raymond W. Nash</i>	
A "Forward Wisconsin" Country School.....	88
School Ventilation: Principles and Practices.....	94
<i>J. M. Robb</i>	

EDITORIALS

Relation of Architects and Boards of Education.....	60
Who Shall Rule—The School Board or the Superintendent?.....	60
Does the Nation Lack in Educational Leadership?.....	61
School Administration and Home-Town Business.....	61

PLATE ILLUSTRATIONS

Forest Avenue School, Glen Ridge, New Jersey.....	30	Jackson School, Hempstead, New York.....	46
<i>Guilbert and Betelle</i>		<i>Ernest Sibley</i>	
State Normal School, Jersey City, New Jersey.....	33	Ludlum School, Hempstead, New York.....	47
<i>Guilbert and Betelle</i>		<i>Ernest Sibley</i>	
The Copernicus Junior High School, Hamtramck, Michigan.....	35	Charles W. Eliot Junior High School, Pasadena, California.....	48
<i>B. C. Wetzel and Company</i>		<i>Marston and Maybury</i>	
Oak Street Junior High School, Burlington, Iowa.....	40	Marshalltown Senior High School and Junior College.....	52
<i>Wm. B. Ittner and C. L. Ritts, Associated Archts.</i>		<i>Dougher, Rich and Woodburn</i>	
Horace Mann Junior High School, Burlington, Iowa.....	42	High and Junior High School, Springfield, Vermont.....	57
<i>Wm. B. Ittner and W. F. Weibley, Assoc. Archts.</i>		<i>Haynes and Mason</i>	
Julia Ward Howe School, Minneapolis.....	43	Board-of-Education Building, Cleveland, Ohio.....	62
<i>Bureau of Buildings of the Board of Education</i>		<i>Walker and Weeks</i>	
Brady School, Detroit, Michigan.....	45		
<i>Dept. of Architectural Engrs. of the Bd. of Ed.</i>			

NEWS AND NOTES

Washington Correspondence.....	66	School Law.....	78
<i>A. C. Monahan</i>		Book Reviews.....	94
School Finance and Taxation.....	73	After the Meeting.....	118
School-Board News.....	76	Buyers' News.....	118

What About Schoolhouse Buildings?



A prominent manufacturer of building equipment whose product goes into practically every type of public and private buildings, including schoolhouses, recently said:

"There will be a material decline in all lines of building construction during the present year. The country just now is largely overbuilt and overhoused. The exception is the schoolhouse. There are too many structures of all kinds, and the for sale and for rent signs are numerous. This applies particularly to the larger centers of population.

"I singled out the schoolhouse as the exception because experience has taught us that a constantly growing school population requires added housing. And what is more, the patriotic men and women who sit on our boards of education are not inclined to be stampeded into false notions of economy.

"While the demand for our product for various types of buildings has dropped, we continue to sell our product to school authorities. The equipping of school structures has always been a dependable business. And when I say this I base it on experience covering many years. The American people demand good teaching service and want their children taught in modern school buildings, recognizing the fact that environment and equipment are factors in education."

What this manufacturer says is substantially true. We may add that where the need for increased schoolhousing really exists, there is the further incentive to schoolhouse construction in the fact that cost of labor and material has been considerably reduced. A number of instances have come to light where new school structures are being erected at a cost reduction of fully from 20 to 30 per cent under the original estimates made a year ago. Unquestionably this situation applies to all sections of the country.

There is also another phase of the subject which here deserves mention. It is found in the loyalty and concern which the American people have always manifested, and always will manifest, in the welfare of their schools. That loyalty and concern springs out of the love for their children. They want them properly educated, and that implies an efficient teaching service and adequate, comfortable, and safe schoolhousing.

THE EDITOR

Copyright, 1932, by the Bruce Publishing Company. All rights reserved. Title registered as Trade Mark in the United States Patent Office. Entered as Second Class Mail Matter in the Post Office at Milwaukee under Act of Congress of March 3, 1879.

Subscriptions—In the United States and possessions, \$3.00 per year. In Canada, \$3.50. In foreign countries, \$4.00. Single copies, not more than three months old, 35 cents; more than three months old, 50 cents. Sample copies, 35 cents.

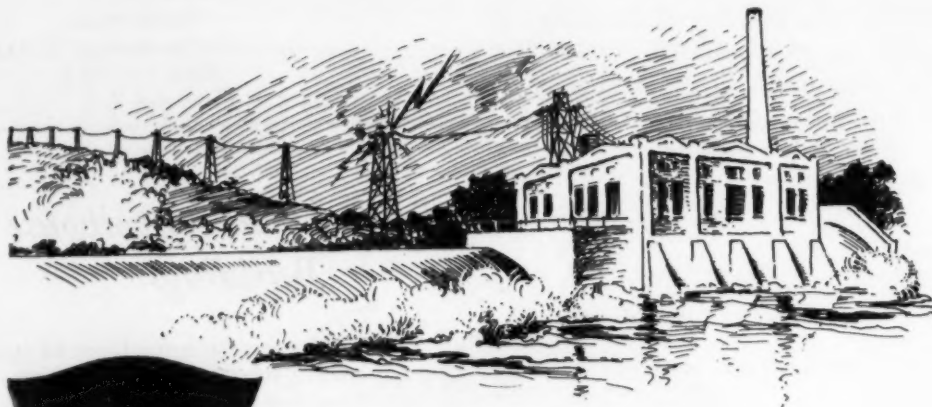
Discontinuance—Notice of discontinuance of subscriptions must reach the Publication Office in Milwaukee, at least fifteen days before date of expiration. Notice of changes of address should

invariably include the old as well as the new address. Complaints of nonreceipt of subscribers' copies cannot be honored unless made within fifteen days after date of issue.

Editorial Material—Manuscripts and photographs bearing on school administration, superintendence, school architecture, and related topics are solicited, and will be paid for upon publication. Contributions should be mailed to Milwaukee direct, and should be accompanied by stamps for return, if unavailable. Open letters to the editor must in all cases contain the name and address of the writer, not necessarily for publication, but as evidence of good faith.

The contents of this issue are listed in the *Education Index*. Member, Audit Bureau of Circulation and Associated Business Papers.

Current Failure Has No Effect On The Reliable "STANDARD" A.C. Constant Service Clock System



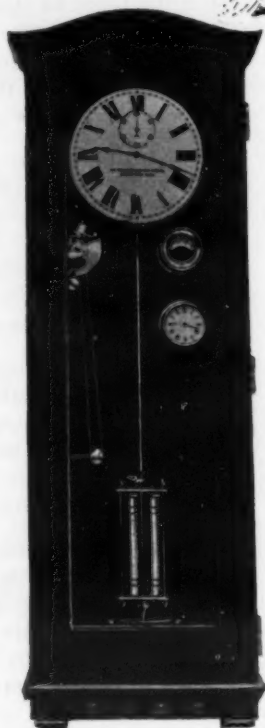
Transmission lines break or leak

Lightning wrecks insulators

Fuses blow

Generators stop

Switches are pulled



But no matter what happens to the main current supply, the building equipped with the reliable "Standard" A.C. Constant Service Clock System is assured a sustained, continuously accurate time service controlled from a finely regulated master clock with reserve power supply.

This remarkably efficient "Standard" Service is the result of long years of painstaking research and experience in the manufacture and installation of satisfactory electric time service for schools, factories, hotels, banks and other public buildings.

Not only is this time system of unexcelled reliability but all component mechanism is of extreme simplicity, ensuring long wear with minimum of service requirement.

*State Teachers College
and
State Normal School
Trenton, N. J.*

*Guilbert & Betelle, Architects
Newark, N. J.*



One of the many important building groups equipped with the "Standard" A. C. Constant Service Clock System, also "Standard" Fire Alarm and Laboratory Voltage Distribution Equipment.

*Write factory or nearest branch for further interesting details
of this remarkably efficient new time service.*

THE STANDARD ELECTRIC TIME COMPANY SPRINGFIELD, MASS.

Atlanta, William-Oliver Bldg.
Baltimore, Baltimore Trust Bldg.
Birmingham, 2920-7th Ave., So.
Boston, 10 High Street
Buffalo, 220 Delaware Ave.

Chicago, Monadnock Bldg.
Cleveland, Union Trust Bldg.
Columbus, 83 South High St.
Dallas, Mercantile Bldg.

Denver, 562 Pennsylvania St.
Detroit, Donovan Bldg.
Kansas City, Mo., Mutual Bldg.
Minneapolis, McKnight Bldg.

New York City, 50 Church St.
Philadelphia, 1612 Market St.
Pittsburgh, Bessemer Bldg.
Scranton, 148 Adams Ave.
Tampa, 5505 Central Ave.

The Standard Electric Time Co. of California
Berkeley, 950 Parker Street

Los Angeles, 124 West 4th St.
Portland, Ore., 65-1st St.

Seattle, 1714 1st Ave., So.
Spokane, 110 S. Cedar St.

The Standard Electric Time Co. of Can., Ltd.
726 St. Felix St., Montreal, P. Q., Can.
Toronto, 57 Bloor St., West

"STANDARD" MAKES EVERY MINUTE COUNT

THE AMERICAN School Board Journal

Volume 84, No. 1

JANUARY, 1932

Subscription, \$3.00 the Year

Ways and Means of Increasing School Facilities in Times of Business Depression

James O. Betelle, F.A.I.A., of the Firm of Guilbert & Betelle, Architects

There can be no doubt that we have had, and are now, in a period of business depression. Even if we are in the midst of a depression, ways and means must be found to provide for the steady increase in school enrollment, either by new buildings, alterations, or additions to old ones, or more intensive use of existing facilities. Just what methods should be adopted is something that each community must decide for itself with all the facts before it. Economy and the judicious spending of funds, no matter how large or small, must be held to be paramount. Economy does not necessarily mean not to spend any money, because the justified expenditure of a reasonable sum usually proves economical in the long run.

It goes without saying that, if children are compelled to go to school by compulsory attendance laws, and parents are punished for not sending them, it is the responsibility of the state and the municipalities to provide safe, adequate, and hygienic school quarters for them. It would be unfair for the state to compel children to attend school in a dilapidated, old building with poor light injurious to the eyesight, or sanitary conditions a menace to their health, or a fire hazard that endangers their lives should a fire occur. In other words, adequate and proper school accommodations must be provided, depression or no depression.

Making Use of Existing Buildings

It is easy to recommend new building construction as the best method of relieving the crowded conditions of the schools, but it is advisable to carefully consider all other possible means before finally deciding. The amount of money it is possible to obtain from the governing authorities is also a deciding factor in what should be done. If the governing authorities refuse, or cannot, make an appropriation for a new school building, then what always happens in a case of necessity, will happen; that is, ways and means must be found to take care of the increase in enrollment, and to postpone costly building operations until some more opportune time. Especially in times of depression the able executive in any business must decide whether the existing facilities can be used to better advantage before he commits his company to the expense of any new building work.

It nearly always develops after a survey of the use of existing school buildings, that a greater number of pupils can be accommodated in them than formerly, and still more could probably be accommodated with minor alterations in the building or the equipment. For example, the auditorium and gymnasium may be used only a few periods during the day. In order to justify the cost of these rooms, they should accommodate several classes of pupils every

period during the day. Then again, the domestic-science room, the laboratory, or the shop may have vacant periods; with clever program-making and the use of suitable movable furniture, these rooms may be used for other school purposes and thereby make more standard classrooms available.

It is recognized that no school building can be used to 100 per cent of its capacity; that is, it is not possible to put a child in every seat in every classroom, in every station in the gymnasium, shops, and laboratories, and in the various

special classrooms, all at the same time. But, with a comprehensive survey of conditions available, worth-while improvements can undoubtedly be made. Many schools are being operated on only a 50- or 60-per-cent-efficiency basis. They should accommodate at least 80 per cent of their maximum capacity, including all home seats and stations.

Making sure that nearly every niche and corner in the existing school is occupied by a pupil during every period of the day, and by the use of movable equipment, we get an immediate



ENTRANCE DETAILS, FOREST AVENUE SCHOOL, GLEN RIDGE, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey



FOREST AVENUE SCHOOL, GLEN RIDGE, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey

improvement in pupil capacity, all brought about with little or no expense. In addition to the above, possibly a few simple alterations, or improvements, to the interior of the building itself would increase still more its pupil capacity. Improvements such as the elimination of partitions or the subdividing of larger spaces into smaller ones, should make possible the accommodation of more classes.

This intensive use of the school building, and the multiple use of rooms and equipment may not be ideal, but they are possible and are being carried out in various parts of the country, where financial conditions caused by the business depression do not permit the expense of new schools or the building of additions to old ones. After all, the subject resolves itself into the most appropriate, the most economical, and the quickest method of caring for an increase in pupil enrollment. The methods adopted may only be temporary measures, but they can be

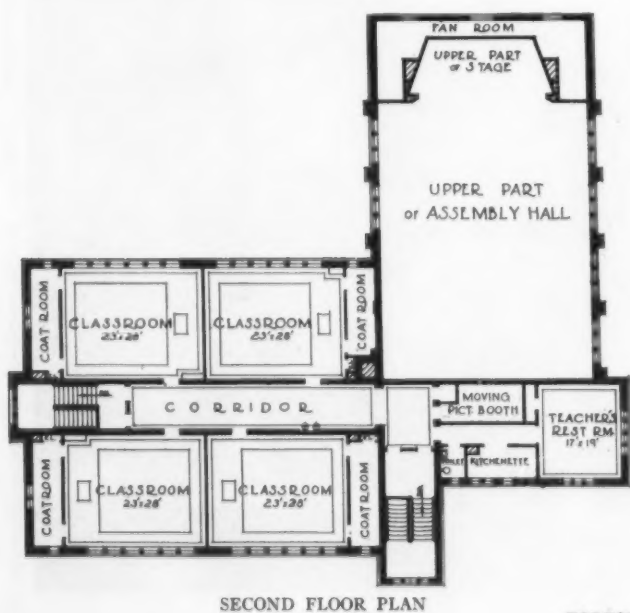
made to answer until better financial conditions permit new building operations.

Another Method of Meeting the Problem

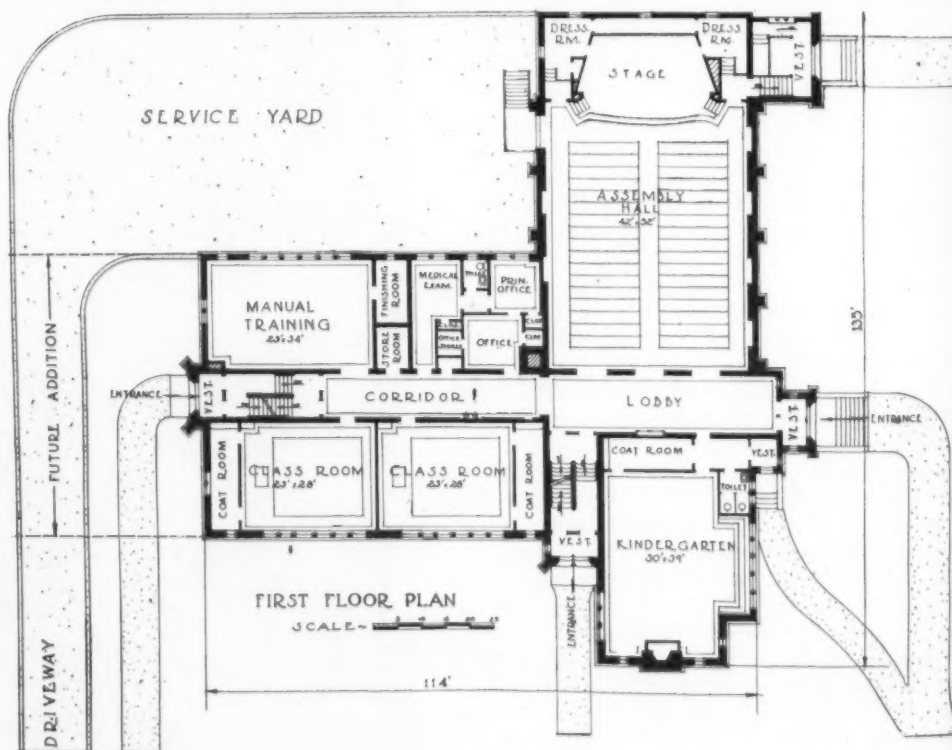
If more intensive use of existing school facilities, and minor changes in buildings and equipment, do not overcome the difficulties, then the next best measures must be adopted. This means the building of additions to one or more buildings, or the erection of a new school. Naturally, it is cheaper to accommodate pupils in an addition than in a new building. An addition usually means only classrooms, as many of the special facilities, such as auditorium, gymnasium, and offices, are already available, where-

as they would have to be provided in a new building, to say nothing of the expense of acquiring new property on which to build.

Practically every school erected in recent years has been planned so that extensions can be made to it. When these extensions are built, many facilities lacking in the old structure can be utilized, as well as regular classroom additions. It is a good time to bring the old building up to date within reasonable limits, in such matters as a new heating and ventilating system, up-to-date toilet fixtures, improved electric wiring, bells, telephones, clocks, and possibly a radio receiving system. Classrooms not receiving sufficient daylight can be improved by in-



SECOND FLOOR PLAN



FIRST FLOOR PLAN

FOREST AVENUE SCHOOL, GLEN RIDGE, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey



AUDITORIUM, STATE NORMAL SCHOOL, JERSEY CITY, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey. (See Pages 33 and 34.)

stalling new, or enlarging the old, windows. It is agreed by everyone that a new building designed to fit a certain educational program is the most satisfactory and permanent method of increasing school facilities; but, like everything else in this world, the best is the most expensive, at least in first cost.

Building a New School

If financial conditions permit and a pressing need exists, the building of a new school is by far the best proposition, when viewed from several angles. Public bodies are alarmed at the extent of unemployment and it is their public duty to relieve this as much as possible. By erecting a new school building, two objects are attained; namely, adequate accommodations for the pupils, and employment for the parents and townspeople. Now is an opportunity in a time of national stress for the school boards of the country to render a service to their communities by erecting new schools at very low costs, and at the same time to help the country in overcoming the existing business depression.

There was a time when agriculture was the

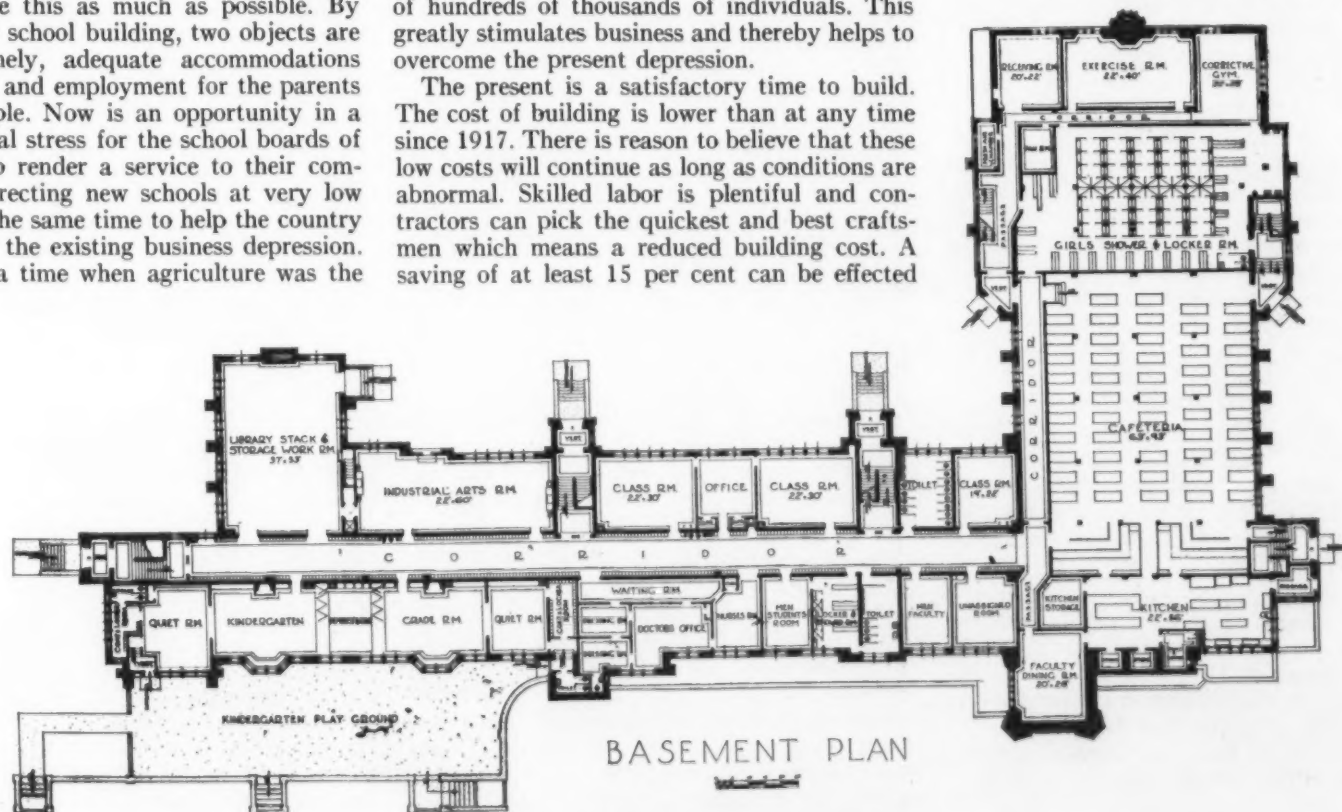
most important occupation of the nation and the barometer by which national prosperity was gauged. In recent years, the building industry has become the premier business of the country by which prosperity is judged. It is for the best interests of everyone to keep the building machinery in motion, because it, in turn, helps the greatest number of people and the nation at large. In view of the fact that the building industry affects either directly, or indirectly, a greater number of people than any other industry, the starting at once of a huge program of public works would distribute funds over a greater area and increase the purchasing power of hundreds of thousands of individuals. This greatly stimulates business and thereby helps to overcome the present depression.

The present is a satisfactory time to build. The cost of building is lower than at any time since 1917. There is reason to believe that these low costs will continue as long as conditions are abnormal. Skilled labor is plentiful and contractors can pick the quickest and best craftsmen which means a reduced building cost. A saving of at least 15 per cent can be effected

at this time, but there is no time to lose if advantage is to be taken of this saving.

It is the duty of various public bodies to provide public building work for the unemployed. This is especially true when private building work is practically at a standstill, as it happens to be at present. The depression teaches one good lesson to the governing authorities, and that is, that the time for state, or municipal, authorities to build is when private building has stopped, thereby overcoming dull times and increasing the sale of building materials when business is slack. Governing bodies can build at

(Concluded on Page 68)



STATE NORMAL SCHOOL, JERSEY CITY, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey. (See also Pages 33 and 34.)

Junior and Senior-High-School Growth and its Effect on Housing Requirements

T. C. Holy, Bureau of Educational Research, Ohio State University

Although the first public high school in America was organized in Boston in 1821, this type of school did not enroll to exceed 10 per cent of the pupils of high-school age until about 1905 and 1906, or approximately 85 years thereafter. The rapidity of growth from that time on is shown by the fact that by 1915, 20 per cent; by 1921, 30 per cent; by 1923, 40 per cent; and by 1926, 53 per cent of all the pupils of high-school age were enrolled in public high schools. In other words, it required 85 years to get as much as 10 per cent of the pupils of high-school age in high school, while during the 21-year period from 1905 to 1926 the proportion was increased from 10 per cent to 53 per cent. If the figures on this same proportion were available for 1931, the probabilities are that the ratio would show an increase over 1926 due in part to the depression, which periods in the past have been characterized by increases in public-high-school enrollment greater than might normally be expected.

The foregoing figures have dealt only in percentages. To understand more clearly, however, the effect which high-school enrollment has had on school buildings it is necessary to deal with actual figures on the number and types of high schools, the enrollment, changes in programs of studies, curricula, etc.

The decade of 1880 to 1890 was characterized educationally by two significant events. The first was, that during this period there was the beginning of the decline of academies and other private secondary institutions, which decline was accompanied by the beginning of the development of the public high school. In 1890, the first year that the United States Bureau of Education secured fairly accurate data on the number of high schools and their enrollments, 2,526 high schools reported with total enrollments of 202,963. In 1900, 6,005 schools reported with total enrollments of 519,251, or approximately two and a half times that of 1890. By 1910, the number of schools had increased to 10,213 with enrollments of 915,061. In 1920, the number of schools reporting was 14,326 with enrollments of 1,857,155, while in 1928, the last year on which the figures are available, 18,166 schools reported with enrollments of 3,354,473. The best estimate for 1931 is that there are approximately 23,000 junior and senior schools enrolling roughly 5,000,000 pupils. On the basis of these figures, the average size of the present high schools would be 217, which number makes a fairly good high school.

Unfortunately, however, both from the point of view of instruction, and economy of operating cost and capital outlay, these 5,000,000 pupils are not uniformly distributed. In Bulletin No. 13, entitled *The Smallness of America's Rural High Schools*, as prepared by Walter H. Gaumnitz of the Office of Education, data were collected from 14,143 high schools located in communities of less than 2,500 population. These schools enrolled in 1926, the year in which the material was collected, 1,080,006 pupils or an average of 76 per school. Of this number of schools, however, 34 per cent, or more than 4,800, enrolled less than 50 pupils, while slightly more than 60 per cent, or approximately 8,500, had an enrollment of 100 or less. The lack of uniformity in this distribution is further shown by the fact that 77.8 per cent of all the high schools in the United States accommodate only 28.8 per cent of the pupils enrolled in public high schools.

¹This article constituted the basis of an address before the National Council on Schoolhouse Construction on October 15, 1931, at Richmond, Virginia.

From the point of view of housing, the chief objection to these many small high schools is the poor utilization of the buildings. This is in part due to the fact that the required program of studies in these small high schools is identical in most states with that required in the large schools, the chief difference being in the number of electives. To provide for these required programs of studies a certain number of classrooms, laboratories, shops, etc., are required. Furthermore, the classes are, of necessity, small, which means that the rooms, even though in use, are used much below capacity. In a recent analysis of several high schools with enrollments of 50 or thereabouts, it was found that approximately one half the classes had enrollments of 12 or less pupils. Recently the writer made another study of the utilization of building space in a group of high schools with enrollments of about 50 each. In these it was found that the facilities available for the enrollment of 50 would accommodate approximately twice the enrollment with little or no change, due primarily to the fact that the capacity of the rooms provided were often from two to three times that of the size of the classes accommodated therein.

Another factor which has influenced school buildings is the trend toward the organization of the junior high school as a separate unit. Two cities, Berkeley, California, and Columbus, Ohio, claim the distinction of having organized the first junior high school in 1910. Just which of these had the first is uncertain. In 1922, or 12 years after, 387 such schools reported to the Office of Education, while in 1928, reports were received from 1,403 with enrollments of 839,388. The probabilities are that figures now will show a rather marked increase over those of 1928. The growth of this type of school unit has greatly increased housing requirements over that required in the traditional eight-grade schools. For example, a satisfactory program for a junior high school includes such subjects as general science, biology, health, art, music, shopwork, home economics, typewriting, bookkeeping, etc., none of which are found in the eight-grade schools.

In the past two or three years considerable emphasis has been placed on a 6-6 type of organization instead of the 6-3-3. For smaller systems the cost of housing this plan of organization is considerably less than that for the junior and senior high school or separate organizations. In a comparative study of the cost of housing 500 students in separate junior- and senior-high-school buildings and a six-year high-school organization, involving the same program of studies as worked out by a group of graduate students at the University of Arkansas during the past summer, it was found that the average difference in the cost of housing was about \$20,000 in favor of the six-year plan. This figure is probably too low, due to the low cubage figure used in the calculations.

The attitude of the Ohio department of education on this question is shown by the following quotation from the report of the department for the year 1928-29: "The six-year high school has all the advantages of separate junior and senior high schools, except those advantages which come from the segregation of age groups. The six-year high school is a practicable form of organization in school systems which are too small to have separate junior and senior high schools, to warrant well-appointed separate buildings, or to support many group activities."

In addition to the actual increase in enrollment as shown above, sweeping changes in the program of studies have greatly affected housing requirements. Quoting from page 963 of the *Biennial Survey of Education, 1926-28*, is the following: "During that first year, 1890, data were collected showing enrollments in nine subjects, namely: Latin, Greek, French, German, algebra, geometry, physics, chemistry, and general history, which subjects with English comprised almost the entire high-school curriculum at that time. The expansion of the high-school program enables high schools now to report enrollments in about 250 different subjects."

A study made by George S. Counts, found in Chapter VII of the *Twenty-Sixth Yearbook of the National Society for the Study of Education*, shows that in a five-year period 471 such changes were introduced into senior high schools of 90 cities. Of this number, 341 were in the nature of additions while only 30 were eliminations. It was found also that in the junior high school the ratio of subjects added to those abandoned was 4.6 to 1. Commenting on this information Dr. Counts says as follows: "While this practice has resulted in a much-needed enrichment of the narrow program of language and mathematics, it cannot be pursued indefinitely. Already the secondary-school curriculum exhibits weaknesses which may be traced to this constant addition of new materials of instruction." The spread of such an attitude might tend to decrease the number of additions made to our high-school offerings of the future.

In addition to the actual increases in the number of courses offered in high school is the further fact that many of these subjects require laboratories which in turn require from two to two and a half times the amount of floor space per pupil as compared with academic rooms. Furthermore, the cost of the equipment per pupil in these laboratories, shops, and other types of special rooms, is far in excess of that required for the regular academic room. It is not at all unusual to find in large high schools expenditures of \$30,000 to \$50,000 for the equipment of a single shop.

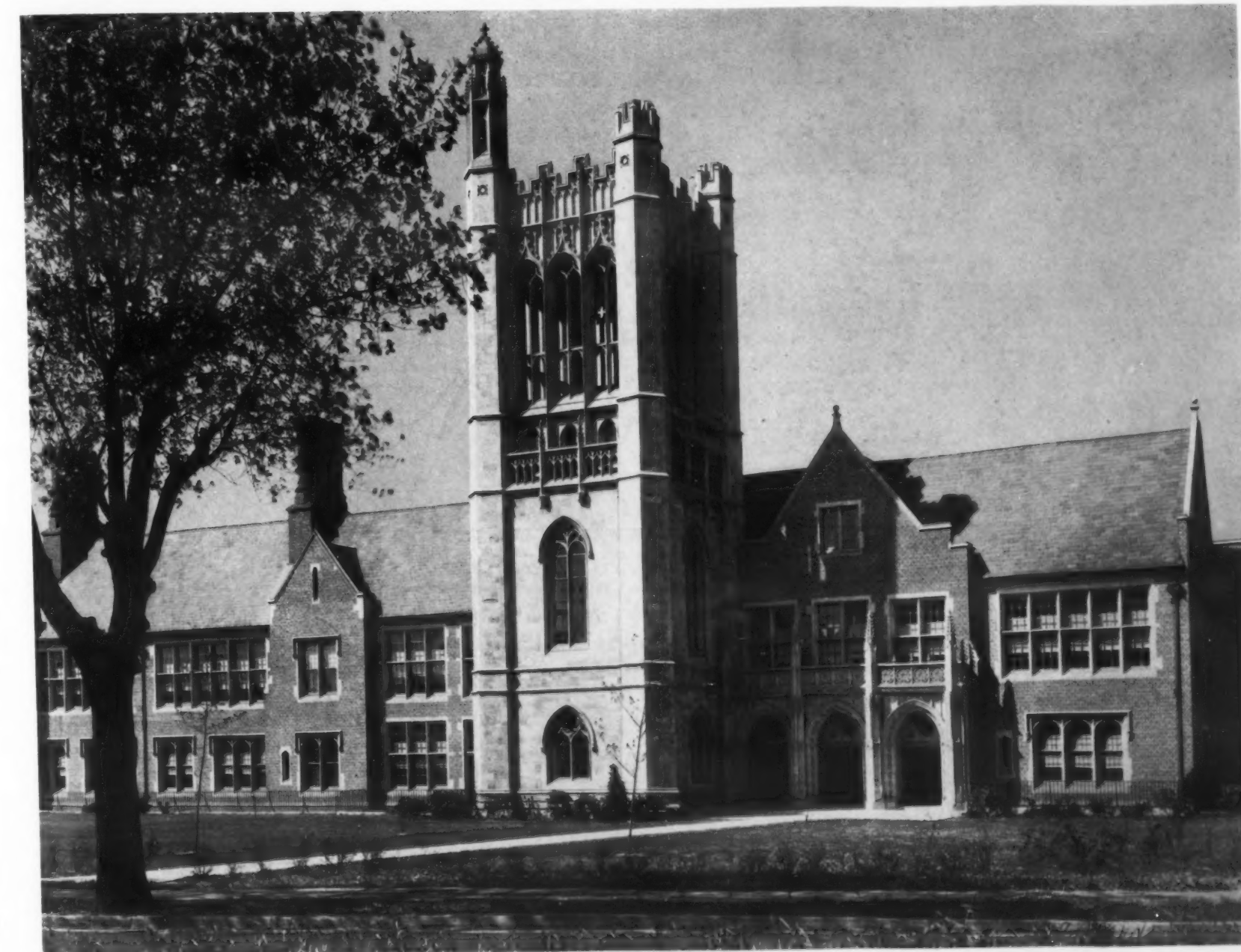
An analysis of the time when certain of these special subjects first appeared in reports of the United States Office of Education, together with the proportion of the pupils taking them, is most enlightening. Biology appeared first in 1915 with 7 per cent of the pupils enrolled in that subject which proportion was increased to 14 per cent in 1928. In 1910, home economics first appeared with less than 4 per cent of the pupils taking that subject, while in 1928, this proportion had increased to more than 16 per cent. Zoology, botany, and agriculture appear first in 1910; manual training, drawing, art, music, and bookkeeping in 1915; shorthand, typewriting, general science, hygiene and sanitation in 1922; and office practice and business training in 1928. It is at once evident from this list of subjects that the cost of providing for them is greatly in excess of that required for the type of high-school subjects offered in 1890.

Another factor which has contributed to the increased cost other than that due to increase in enrollment is the emphasis which has been placed on health and physical education since the war. This emphasis is largely due to the results of the physical examinations of the men entering military service. Of 2,753,922 men examined during that period, 468 out of every thousand had physical defects of some char-

(Concluded on Page 100)



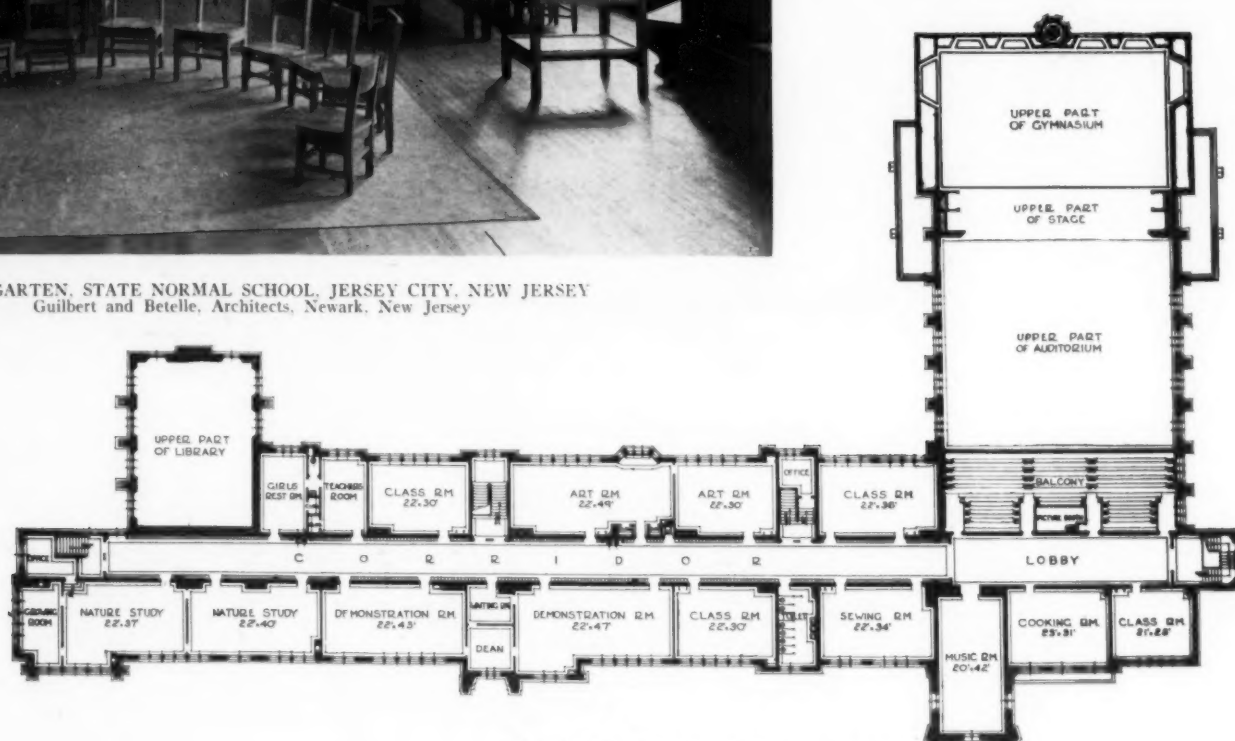
STATE NORMAL SCHOOL, JERSEY CITY, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey



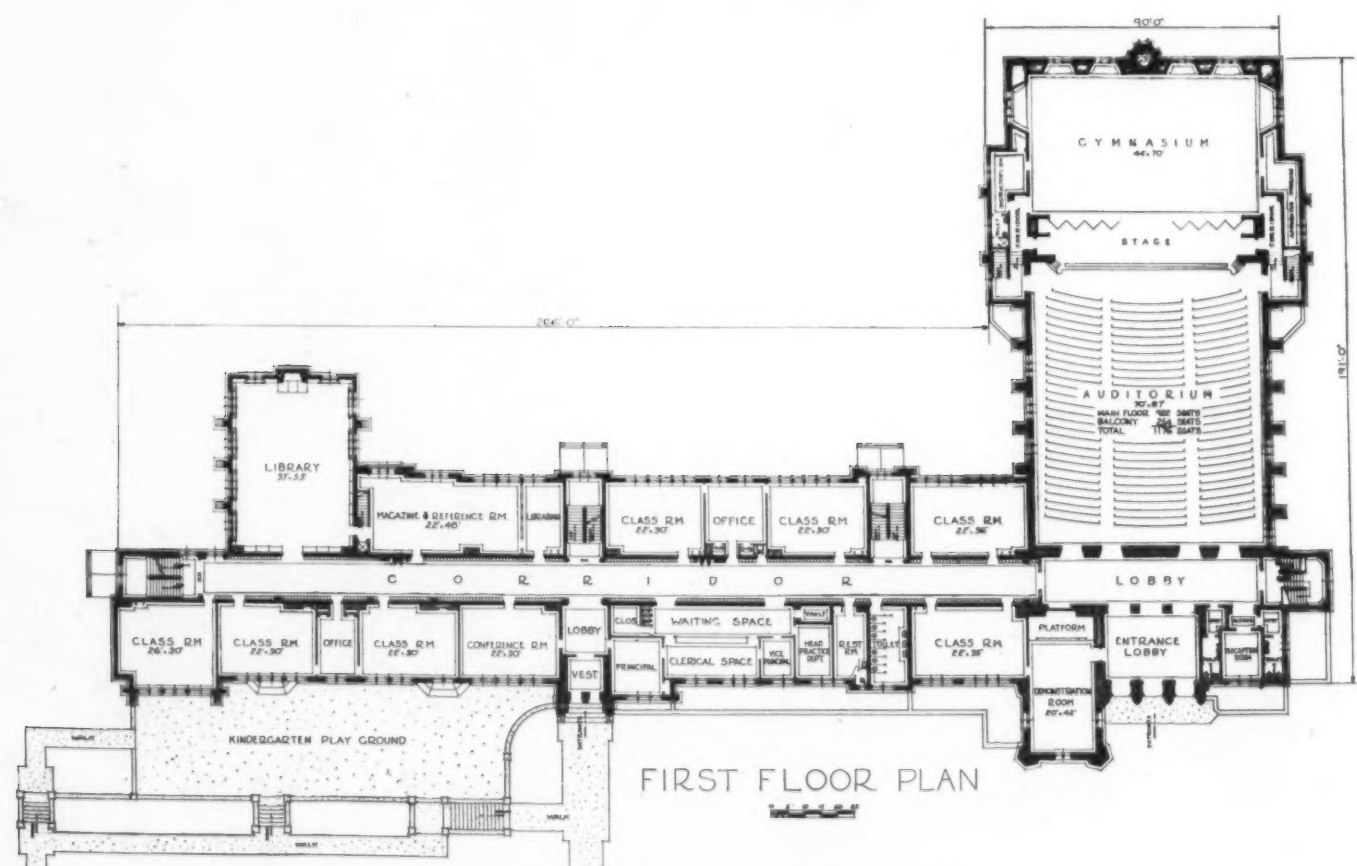
STATE NORMAL SCHOOL, JERSEY CITY, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey (See also Pages 31 and 34)



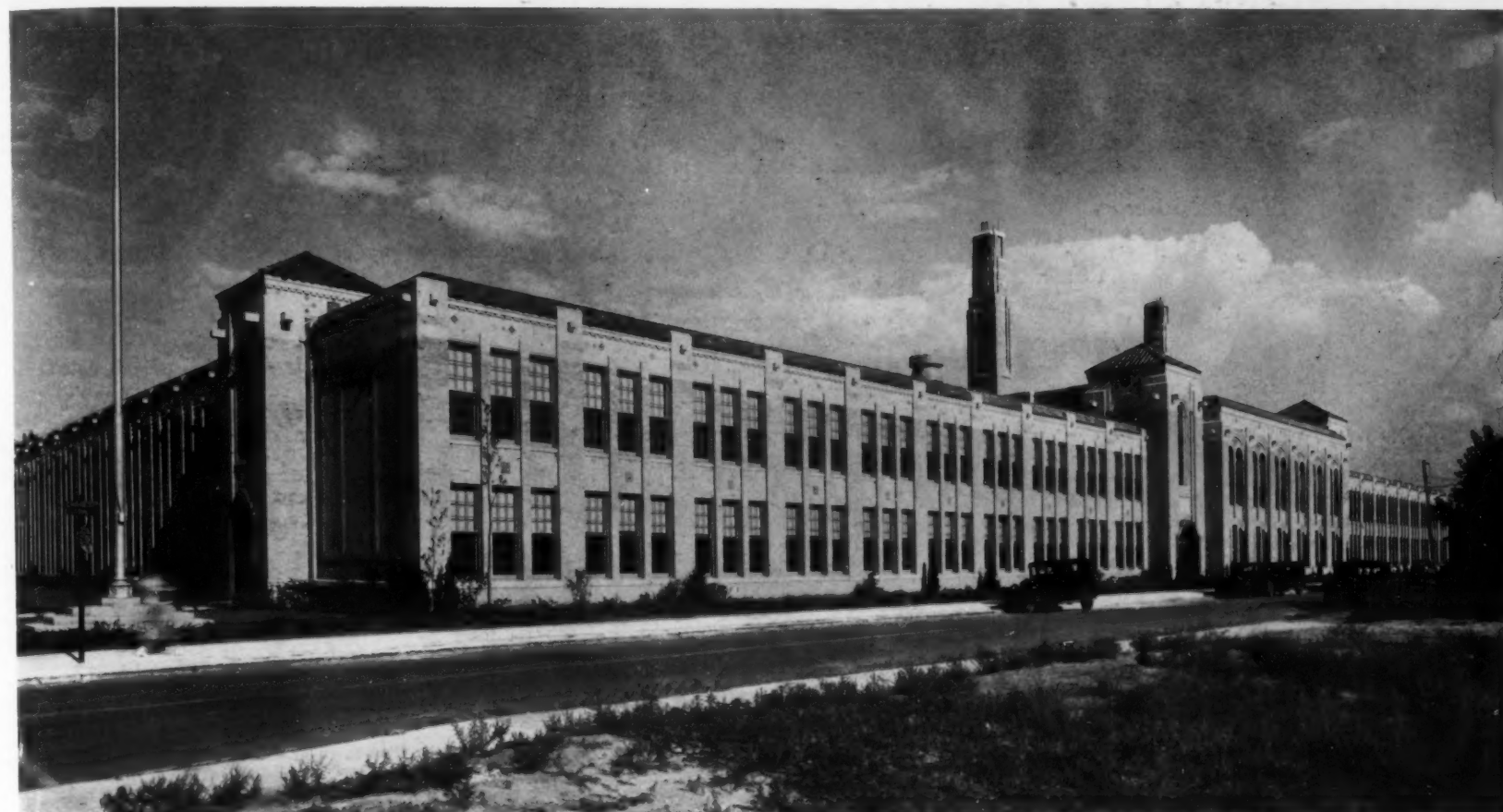
KINDERGARTEN, STATE NORMAL SCHOOL, JERSEY CITY, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey



SECOND FLOOR PLAN



STATE NORMAL SCHOOL, JERSEY CITY, NEW JERSEY
Guilbert and Betelle, Architects, Newark, New Jersey



THE COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN
B. C. Wetzel and Company, Architects, Detroit, Michigan (See Page 36)



LIBRARY, COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN
B. C. Wetzel and Company, Architects, Detroit, Michigan
Glass-enclosed conference rooms at the farther end of the library are used for group-study and guidance purposes

Integration of Educational and Architectural Planning Illustrated

The Copernicus Junior High School at Hamtramck, Michigan

John A. Jay, Director of Public Relations, Hamtramck

The construction of the Copernicus Junior High School of Hamtramck, Michigan, was necessitated by an increase of 4,472 pupils in junior- and senior-high-school enrollment during the past seven years. The Hamtramck High School, originally planned as a six-year high school, has been on half-day session for the past three years, with an attendance of more than twice its normal capacity.

The building of the new junior high school alleviates this congested condition. It accommodates 2,550 pupils, of which number 2,200 are juniors. As a matter of convenience, 350 elementary pupils have been included in the enrollment.

Dr. M. R. Keyworth, superintendent of the Hamtramck public schools, was determined to achieve a complete integration of educational and architectural planning, and he organized the preliminary work in such a way as to achieve that end. It was the definite purpose of the educational and architectural planning to provide an institution which in its physical aspects would facilitate instruction in accordance with a specific philosophy of education. The philosophy of education of the Hamtramck public schools is based essentially upon the belief that the greatest need of the children of today is an education which will enable them to live a happy, successful, and purposeful life in this democracy. Within the general system of organization the method of instruction emphasizes initiative, self-direction, self-appraisal, and self-control.

The various phases of the work which ultimately resulted in the present building, were performed by the following organization and individuals: (1) architectural, by B. C. Wetzel & Co.; (2) educational planning, by Dr. Arthur B. Moehlman of the University of Michigan, Dr. M. R. Keyworth, and the supervisors of instruction of the Hamtramck schools, notably Mr. Harold J. Van Westrienen and Mrs. Lois Cole Rodgers; (3) color planning by Mrs. J. Robt. F. Swanson; (4) maintenance provisions by Mr. A. C. Lamb, maintenance engineer of the Hamtramck schools.

The Major General Features

The major general features of the building may be summed up as follows: (1) It represents an attempt to incorporate advanced educational features. (2) Provision has been made for possible future readjustments. (3) Beauty has been coordinated with utility. (4) It has been planned so as to be adaptable to community use. (5) Certain arrangements provide for the facilitation of administration. (6) The psychological and artistic advantages of coloration have been utilized. (7) The building has been adapted to the site, the community, and the educational program.

Special Features

1. Three major considerations were observed by the architect, Mr. B. C. Wetzel, in planning the building: (a) directness, (b) simplicity, and (c) extended frontage which would be adaptable to the site.

The two end wings are two stories in height, while the central portion has a three-story plan. The auditorium is located directly across the corridor from the two front entrances. The administrative offices are on the front elevation between the two entrances. The library is placed over the administrative offices, and the classrooms and special rooms extend to either side of the main entrance through both the central portion and the wings. The health unit, the auditorium, and the cafeteria form the center of the "E" of the general plan.

Architecturally the building represents a grouping of modern Romanesque design, faced with materials of brick, stone, and terra cotta. The exterior is brick in several shades of orange, variegated limestone, and terra cotta. The terra cotta consists mostly of inserts in the stone, of several colors, ranging from light buff through orange to reddish purple. The whole building has a pleasing and harmonious color combination.

2. Color has been used throughout as will be noted later.

3. The building is fire-resistive.

4. Safety devices have been installed throughout. These include conveniently placed and foolproof

fire-alarm boxes, automatic heat and humidity regulators, instantaneous control buttons for stopping machinery in all vocational shops, special stair treads, one-way traffic arrangements on stairways, key-lock electric-light switches, safety-front switchboards, an automatic system of water temperature control in all shower rooms, plus numerous provisions for the regulation of boiler pressures, etc.

5. All rooms which are subject to noise and vibration in the course of room activities are soundproofed with double-glassed doors, soundproof walls and ceilings, and sound-absorbing baffle plates in ventilation shafts, or are provided with sound-absorbing ceilings. The location of these rooms has

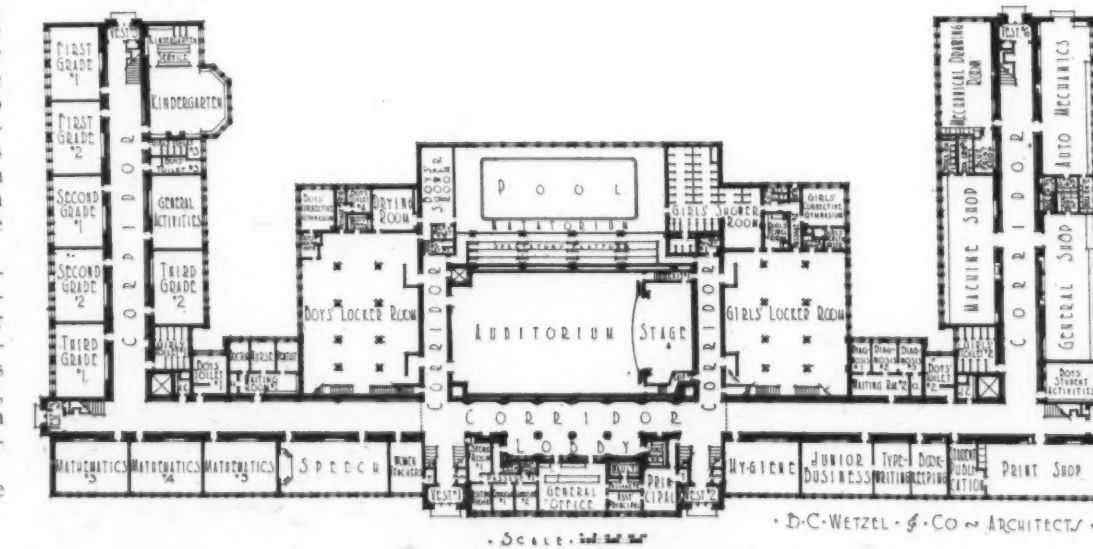
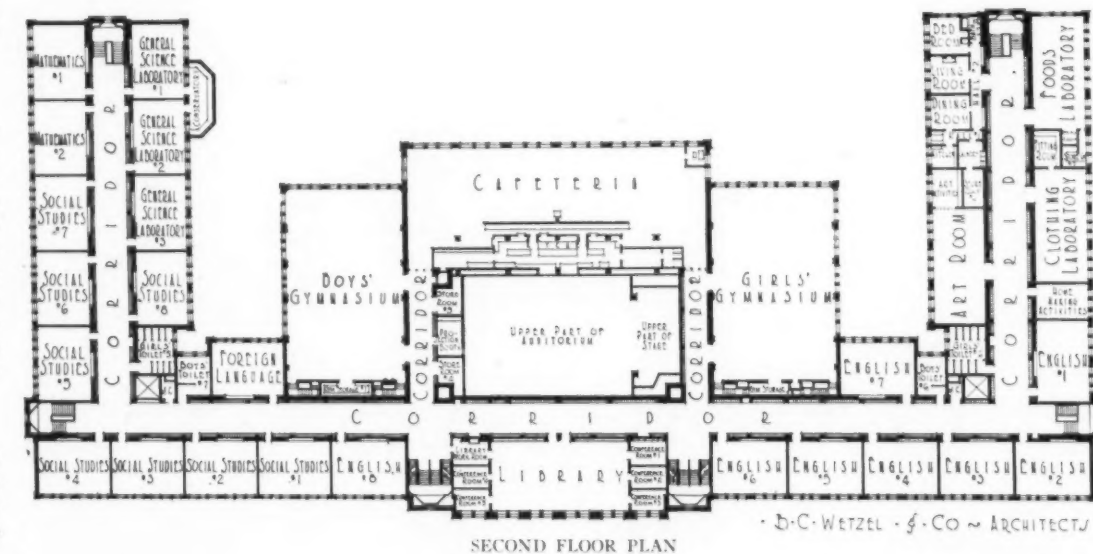
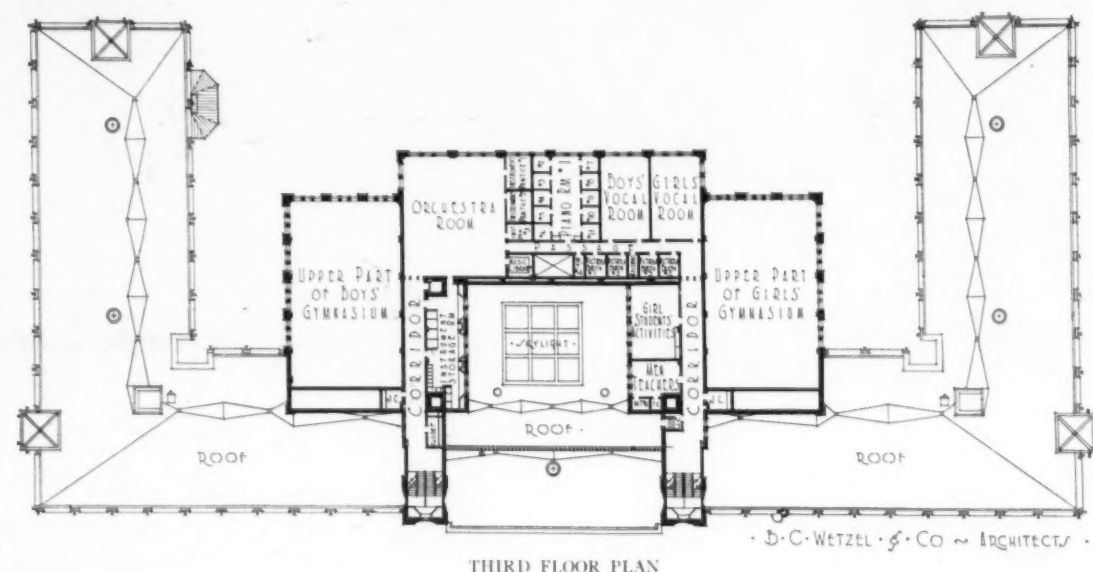
been taken into consideration in the planning of the building.

Sunlight Provided

6. The building is "E" shaped and extends lengthwise north and south. In locating the various rooms consideration has been given to the relative value of sunlight. There is a 1-to-5 ratio between window space and floor space. Artificial lighting provisions have been made according to standard scales.

7. Individual conference rooms for group activities are located at both ends of the general library, for student use, and to one side of the main office for the use of the visiting teacher and counselors.

8. Since considerable individualized instruction



COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN
B. C. Wetzel and Company, Architects, Detroit, Michigan



SOCIAL SCIENCE CLASSROOM, COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN
A Social Science classroom which, with the exception of the glass-covered maps and enlarged bulletin board areas, is typical of all academic classrooms. Note group discussion tables.

is required, provisions have been made in classrooms for filing lesson sheets, individual projects, and for storage.

9. In anticipation of possible changes of educational methods toward larger classes, the weight of the building is carried on a reinforced-concrete skeleton structure, designed in 15-ft. units, with nonsupporting walls, thus facilitating any future alterations.

10. Classroom flooring (with the exception of certain vocational shops) is maple. Corridor and toilet floors are gray mottled terrazzo. The gymnasium floors are maple.

11. Woodwork and furniture are birch.

12. The ventilating system changes the washed air completely in each room every ten minutes. The classrooms are heated with direct steam radiators and with tempered air forced into the rooms. Steam and air are under automatic control.

13. A telephone system of the interphone type, with 76 instruments, is installed. It is possible to connect any room with any other, through the main switchboard, thus providing supervising control. The advantages of this in an administrative way are apparent. The principal, by simply throwing a switch, can call and give directions simultaneously to every member of the personnel.

14. The building has been provided with a vacuum-cleaning system with 74 openings to which



CAFETERIA, COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN
A cheerful color scheme is a feature of this well-lighted and efficiently furnished room.



A teacher's desk unit built into the wall with ample space for files, instruction sheets, and reference books is a feature of all shops. When closed the entire unit is contained in the inner breathing wall.

The machine shop at the left is typical of the open arrangement and complete equipment of the vocational shops in Copernicus Junior High School. The lathes are in the extreme background, as is also the seating for the lecture groups.

cleaning equipment on flexible hoses can be connected. The system provides for five men cleaning at one time.

Ample Exits

15. The boiler room is 22 feet below the level of the street. Pumps take the overflow from the boilers, swimming pool, etc., up to the level of the city sewers. Two automatic sewage pumps of 200-gallon-a-minute capacity operating against a "head" of 45 feet, are each equipped with a 5-horse-power motor. One of these pumps is always in reserve.

16. The building has nine exits. The corridors are 14 feet wide, in the clear, with drinking fountains and wastebaskets recessed. The thickness of walls permits all doors to open without obstructing traffic in the corridors.

17. The building is planned as to utilize all space. The classrooms are of the minimum size (22 by 30 ft.) which will accommodate the required number of pupils per class (52).

18. Ease of administration characterizes the entire building. The signal call system, telephone and radio in each classroom, the location of offices and storage rooms, the arrangement of lockers, corridor gates to close off portions of the building, and the arrangement for heating portions of the building separately, are typical examples.

While there are certain variations in the planning and equipment of the academic classrooms, some features are common to all and, for the sake of brevity, these are itemized as follows:

1. Academic classrooms have woodwork and furniture in color.



THE KINDERGARTEN, COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN

2. Junior-high-school classrooms have seating arrangements for group activities and individual instruction. This end is attained by equipping each room with 40 movable tablet-arm chairs and two group-discussion tables, each with 6 straight chairs. This arrangement facilitates instruction since it affords immediate adjustment for group or audience situations.

3. The tendency has been to diminish the area of blackboard space and to increase the bulletin-board area. This is particularly true of the social-science rooms.

Electrical Equipment Complete

4. Rooms are equipped with electrical outlets for use with stereopticons and balopticons, and moving-picture machines.

5. A general radio hook-up system has been devised, which permits any program from outside, or from within the building, to be broadcast to all parts of the building. When some event is taking place in the auditorium, which warrants the attention of the entire school, the radio is brought into operation, and the entire student body becomes one audience, even though the children are grouped in widely separated rooms. National events, important ceremonies, etc., can be brought to every classroom or only to the social-science rooms, according to importance.

In addition to the standard features common to academic classrooms, each classroom of this group

has certain features particularly adaptable to its specific purpose.

1. In mathematics and general science, five rooms are provided for the former and three for the latter. The mathematics rooms are standard rooms. The three general-science classrooms are planned to serve also as laboratories. Demonstration desks are built into each of these rooms, equipped with hot and cold water, gas, and electricity. In addition to cupboard units, these rooms have glass storage cases.

A conservatory, glassed on three sides, is connected with two of the general-science rooms. The conservatory contains a stationary aquarium, germinating boxes, spaces for growing plants, and animal cages.

2. With the exception of a few features, the social-science rooms are standard. The built-in glass-covered political maps of the United States and Europe are safe from soil and wear. The social-science rooms are grouped so as to permit close cooperation of teachers and pupils and they are located close to the library.

3. Language rooms are also located near the library and are standard rooms.

4. The art room has tilt-top desks, movable stools, easels, a wash sink, zinc-lined pottery shelves, and display cases.

Shops Well Equipped

As with the academic rooms certain features are common to all vocational rooms:

1. Teacher's cabinets, containing a drop-leaf desk, a bookcase, a steel letter file, a cloak cabinet, and storage drawers, are built into a wall.
2. Each room is provided with a wash sink.
3. Adequate storage cabinets are a part of each shop. Steel shelving, drawers, and filing cases are provided.
4. Project storage lockers are in each room. These are steel and located under the workbenches in the shops.



COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN

The auditorium lighting fixtures can be lowered to the floor, thus minimizing maintenance difficulties.

5. Every shop is equipped with steel containers for tools.

6. Each shop has a steel apron cabinet.

7. Detachable display panels are hung on concealed wall molding in each shop, so that projects may be mounted.

8. Adequate storage facilities for supplies and projects make it possible for the teacher to be relieved of the usual problems that are involved in this respect, and to devote his time to instruction.

Although all vocational rooms contain the standard features outlined in the foregoing, and many more not mentioned, there are a few variations in particular rooms.

The Auditorium Unit

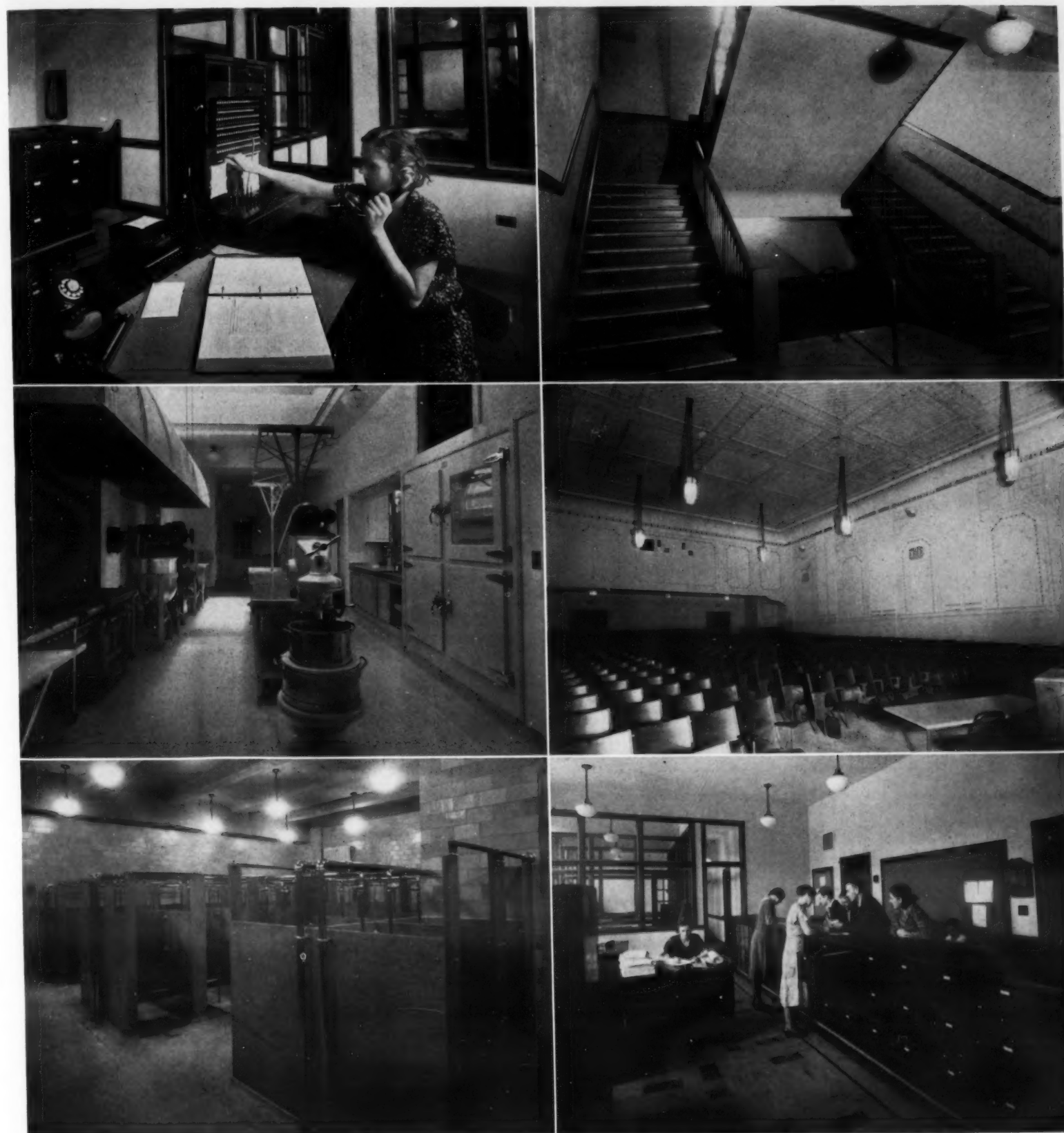
The facilities for the commercial education are so arranged that the work may be completely corre-



A second-grade class in the elementary unit of the Copernicus Junior High School. This room is fitted with complete cabinets and filing provisions for storing teaching materials, pupils' work, and reference books.



The cooking room contains at the central end a dining set placed in an alcove which saves space and provides for double use of this useful feature.



INTERIOR VIEWS OF THE COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN

B. C. Wetzel and Company, Architects, Detroit, Michigan

TOP LEFT: The main switchboard is the nerve center of the building.
 CENTER LEFT: The kitchen is equipped with electrically-operated cooling rooms, motor-driven machinery, and high-grade hotel ranges, etc.
 LOWER LEFT: The girls' showers have been designed for a minimum of space and maximum privacy.
 LOWER RIGHT: The office is equipped with complete filing equipment, large bulletin boards, and a fire alarm exchange.

lated. The three units are separated by glass partitions.

Features necessary to visual instruction were not neglected. Since a large proportion of the education acquired by the average individual comes through the eye, visual instruction must deal with the entire field of the school curriculum. Accordingly, the auditorium and all classrooms and laboratories are especially arranged and equipped to take care of the physical and educational elements involved.

The auditorium will accommodate an audience of 700 persons. It serves primarily as an integrating unit for all classes. While not an educational feature, it should be mentioned that the auditorium lighting fixtures are suspended by a device which permits them to be lowered to the floor for cleaning.

Two gymnasiums are provided, one for boys and one for girls, each with locker and shower rooms. Each locker room contains 196 full-length lockers and 1,176 individual lockers.

The boys' room contains 30 gang showers, and 8 wall showers, to accommodate 100 or more pupils at one time. The girls' shower room contains 50 individual showers and a hair dryer with 24 openings. There are towel-supply rooms for each shower room.

The Cafeteria

A cafeteria, centrally located on the second floor, with entrances at either end, is equipped with 58 tables and 348 chairs. The cafeteria is served by a kitchen which is completely equipped and mechanized. A freight elevator, operating from the receiving and storage rooms in the basement, affords immediate and convenient connections.

As a matter of convenience, the kindergarten, first, second, and third grades of an elementary school have been included in the north wing, on the first floor.

The kindergarten has a glazed-tile sand box, an aquarium, a locker room adjacent, and a toilet room for the use of kindergarten children.

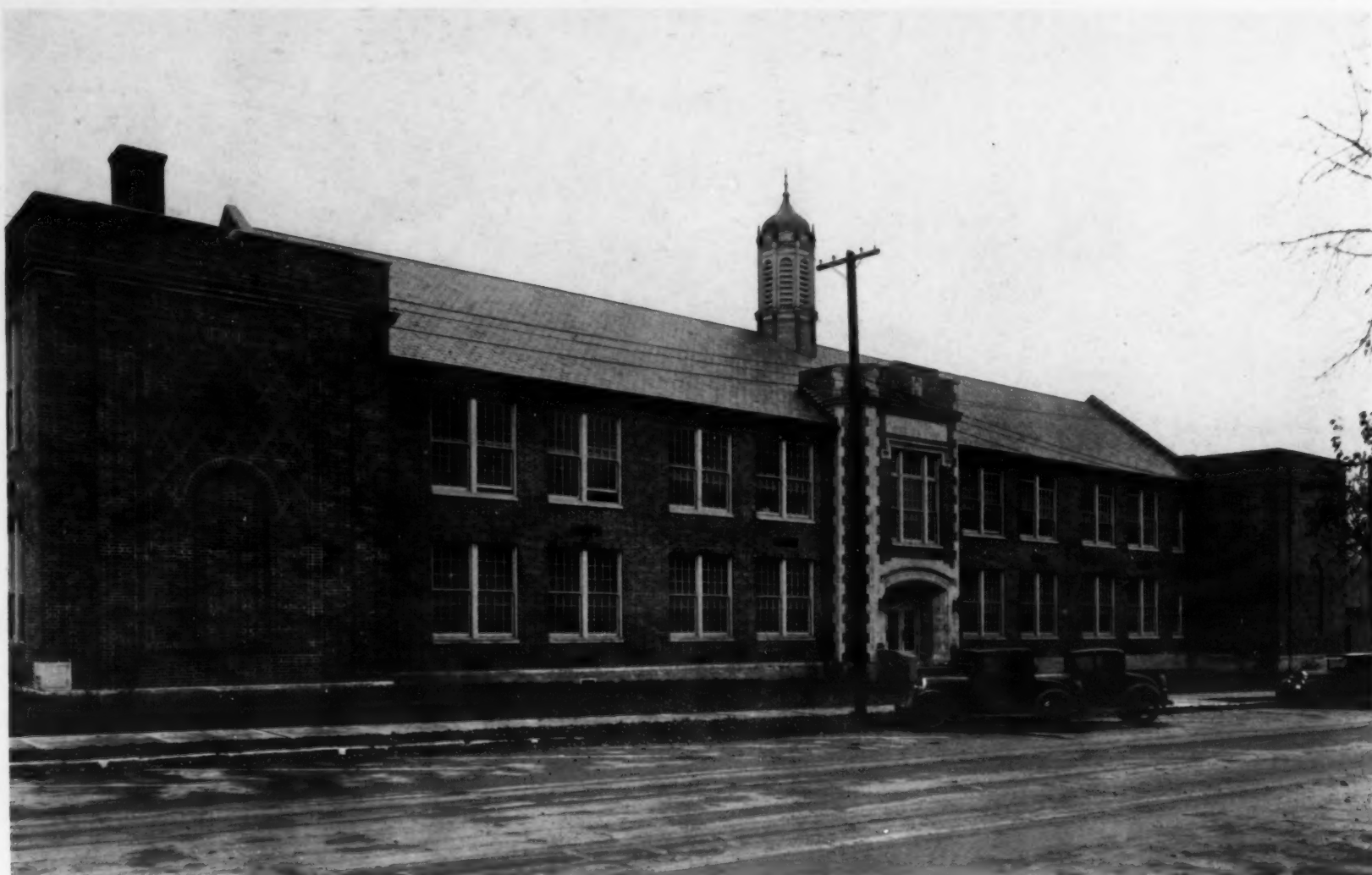
The library is capable of accommodating 150 pupils in the main room. At either end of this room are three conference rooms for group activities. Shelf space is provided for approximately 10,000 books.

Unique Features

Two unique features of the building are: (1) the utilization of a harmonious color plan in both decoration and finishing, and (2) the planning of the music unit for individualized mass instruction in larger classes.

Color has become an integral part of the everyday life of the nation. In recent years color has come to play an important part in the appearance of homes, theaters, hotels, automobiles, clothing, and countless other institutions, agencies, and utensils. The school alone has remained aloof and apart. Steeped in conservatism, the buildings which play such an important part in the environment of children, have retained their drab, lifeless aspect.

(Concluded on Page 102)



MAIN ELEVATION, OAK STREET JUNIOR HIGH SCHOOL, BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; C. L. Ritts, Associate Architect, Burlington, Iowa
Simplicity in line and the absence of all unnecessary elaboration together with the pleasing brick texture gives the building its charm.

Burlington Building Program Includes Junior-High-School Organization

Superintendent W. G. Brooks, Burlington, Iowa

In 1922, the College of Education, State University of Iowa, was invited to make a survey of the Burlington school system. Dr. Harry A. Greene conducted the survey. Among other things, his report recommended the addition of increased facilities to the high-school plant, the consolidation of certain elementary units, a gymnasium, and two junior-high-school units.

The addition to the high school was completed in September, 1925, at a cost of \$325,000. A \$65,000 stadium has been added. It is a natural amphitheater, convenient to the high school, near the center of the city, providing tennis courts and a quarter-mile track. Ample space has been reserved for a future gymnasium. Its present seating capacity is 3,500.

The campaign which culminated at the March election in 1929, when the present program was authorized, began in September, 1928. Many of the elementary schools were crowded, classes were conducted in halls, cloak-rooms, and in undesirable basement rooms. Some of these buildings had been in use for 65 to 75 years and were no longer suited to a modern program of education. The board felt that the time had come when definite steps should be taken toward introducing the junior-high-school organization into the Burlington school system. These conditions and the importance of a reorganization was taken up with the parent-teacher associations of the city. In those schools not having this organization, mass meetings were held where interested patrons talked over the need of better school facilities.

By January, 1929, petitions from every part of the city had been presented to the board of education urging that steps be taken to place

the needs of the schools before the voters. As these petitions were received, they were given to the press that the public, might be informed. The movement from the start was known as the patrons' campaign for better schools.

Then followed an intensive publicity campaign. It was carried into every organized group in the city. Fraternal organizations took it up. Many churches called attention to it in their bulletins or from the pulpit; social gather-



LIBRARY, OAK STREET JUNIOR HIGH SCHOOL, BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; C. L. Ritts, Associate Architect, Burlington, Iowa
The room is arranged as a community reading room with entrance directly from the main vestibule.

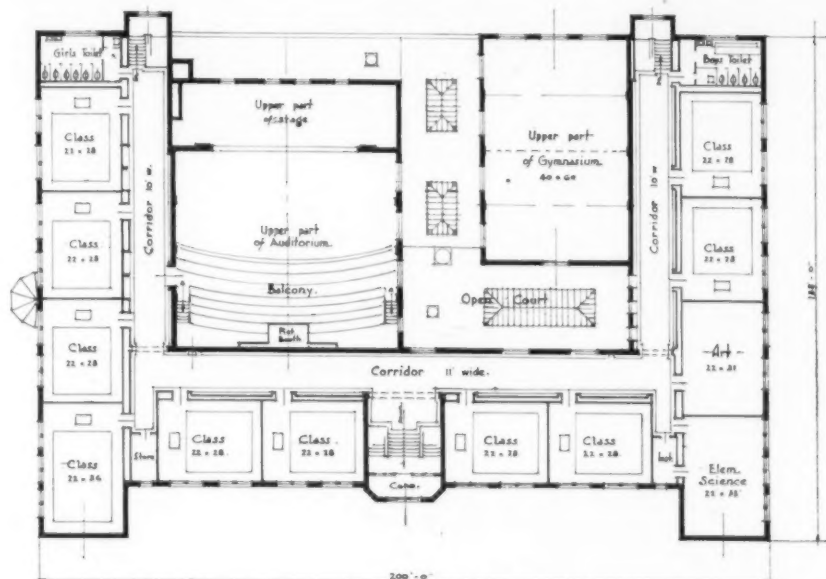
ings, dinner parties, and sewing circles had their attention called to the importance of the movement by volunteer workers. Several thousand bulletins were printed and distributed to the homes. For two weeks the press featured daily, the coming election and the importance of the new program. The parent-teacher associations, chamber of commerce, and the woman's bureau did effective work. There was no organized opposition; all community forces co-operated freely and willingly. It was in a real sense a community undertaking.

At the March election, the voters of the school district authorized, by a substantial majority, a building program to include an addition to Prospect Hill Elementary School, a junior-high-school-elementary unit known as the Oak Street Junior High School, a building in the south part of the city known as the Horace Mann Junior High School, a shop unit for the Industrial Department near the Senior High School, and an elementary building to take the place of the Salter and Grimes elementary buildings, thus combining two elementary districts.

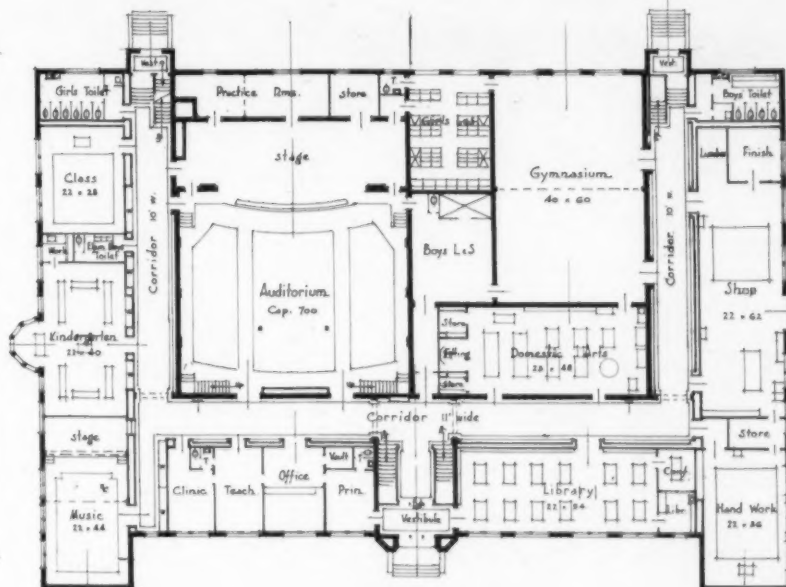
The board, after careful consideration, selected William B. Ittner, of St. Louis, as consulting architect to work with W. F. Weibley and C. L. Ritts, local architects.



KINDERGARTEN, OAK STREET JUNIOR HIGH SCHOOL, BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; C. L. Ritts, Associate Architect, Burlington, Iowa
The over-sized room provides adequate floor space for the diversified activities of the kindergarten.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

The building is planned as a Junior High School to accommodate 800 pupils. A portion is being temporarily used for kindergarten and the first six grades. In the interest of the widest community uses of the building, all special rooms, including the Auditorium-Gymnasium and the Library, have been placed upon the first or main floor. The administrative group is also arranged conveniently to the main entrance on this floor, and the Library has been provided with an entrance directly from the vestibule. The second floor houses the academic classrooms as well as the art and general science rooms.



GENERAL SHOP

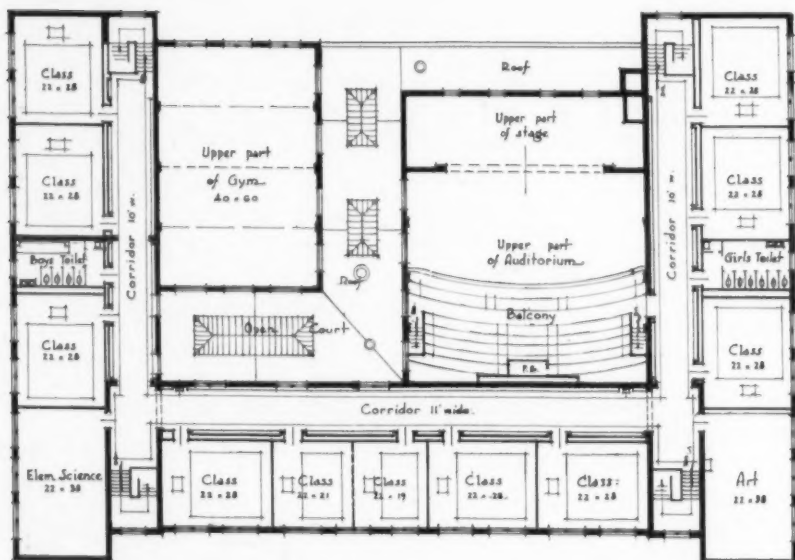


SEWING ROOM

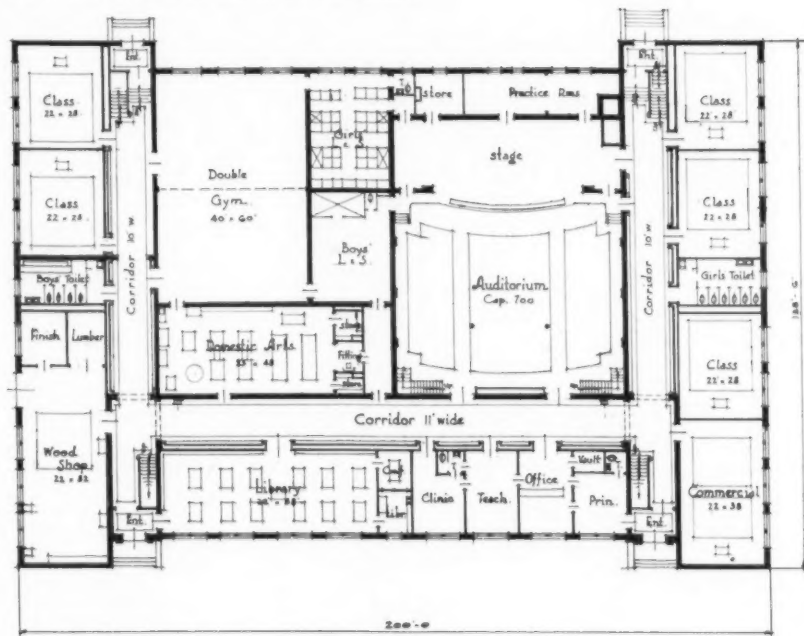
OAK STREET JUNIOR HIGH SCHOOL, BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; C. L. Ritts, Associate Architect, Burlington, Iowa



HORACE MANN JUNIOR HIGH SCHOOL, BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; W. F. Weibley, Associate Architect, Burlington, Iowa
Restraint in the interior design, together with pleasing wall texture, dignifies the exterior of this building.



SECOND FLOOR PLAN



FIRST FLOOR PLAN

HORACE MANN JUNIOR HIGH SCHOOL, BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; W. F. Weibley, Associate Architect, Burlington, Iowa



ADMINISTRATION BUILDING, BOARD OF EDUCATION,
BURLINGTON, IOWA

A substantial residence containing 25 rooms and built in 1900 at a cost of \$65,000 was acquired with the Horace Mann Junior High School site at a cost of \$2,000. This building was readily convertible into commodious administrative quarters for the board of education, superintendent of schools, and all of the executive offices of the board.

The addition to Prospect Hill Elementary School, was completed in February, 1930, at a cost of \$48,000. It was constructed so as to admit of adding a second story when the growth of the school so demands, and contains a play auditorium with a seating capacity of 225, a kindergarten, a first-grade room, a principal's office, a teachers' restroom, and lavatory facilities. The auditorium is used by the school, the parent-teacher association, and community groups.

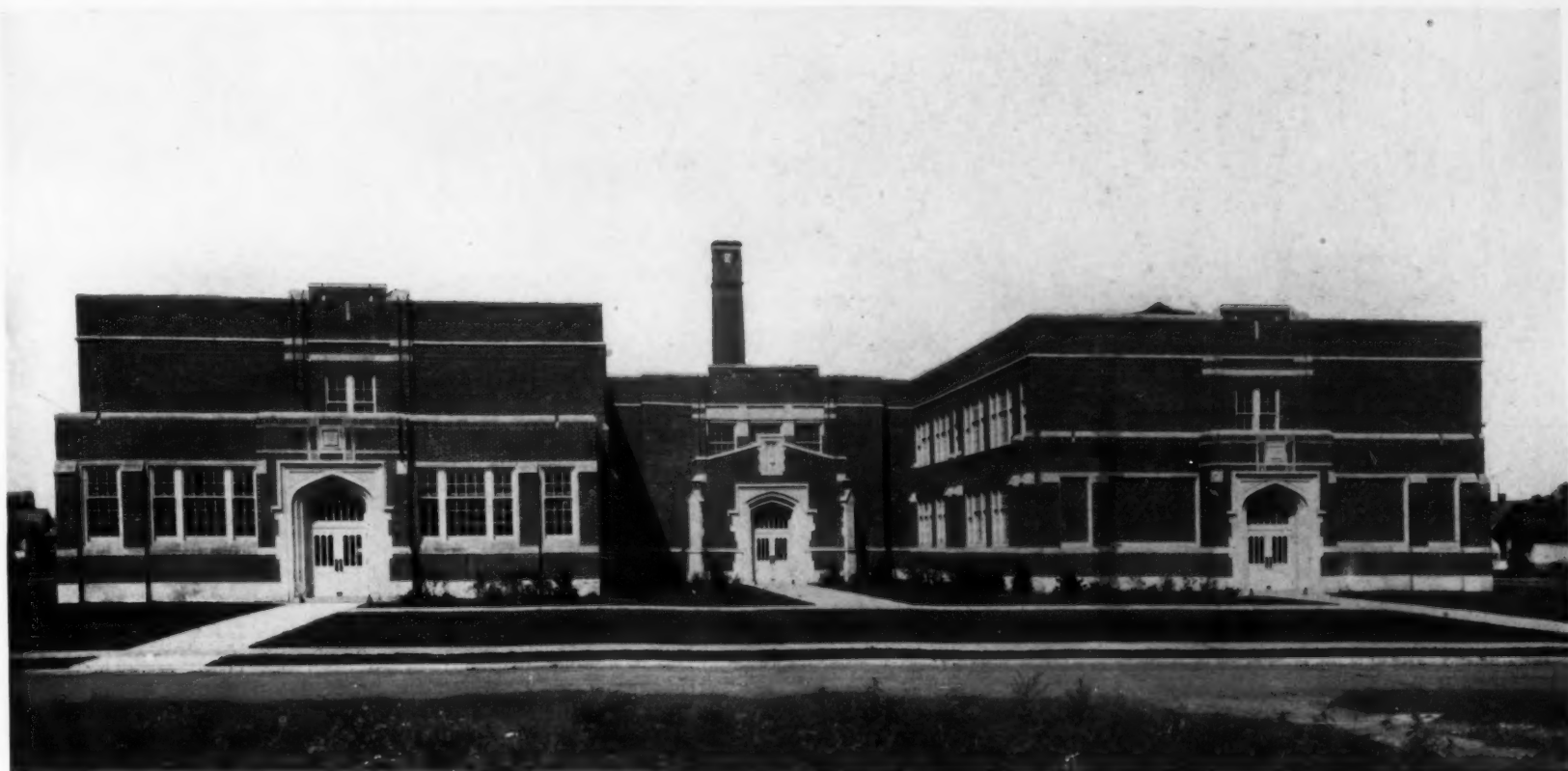
Oak Street Junior High School

The Oak Street building was planned primarily as a junior high school to accommodate the seventh-, eighth-, and ninth-grade pupils of the north part of the city. The east end of the building is now occupied by an elementary unit from the kindergarten through the sixth grade.

(Concluded on Page 105)



CLINIC, HORACE MANN JUNIOR HIGH SCHOOL,
BURLINGTON, IOWA
Wm. B. Ittner, Architect, St. Louis, Missouri; W. F. Weibley,
Associate Architect, Burlington, Iowa



JULIA WARD HOWE SCHOOL, SIX-YEAR ELEMENTARY, MINNEAPOLIS, MINNESOTA
Bureau of Buildings of the Board of Education, Architects and Engineers, Minneapolis, Minnesota

Two Functionally Planned Elementary Schools

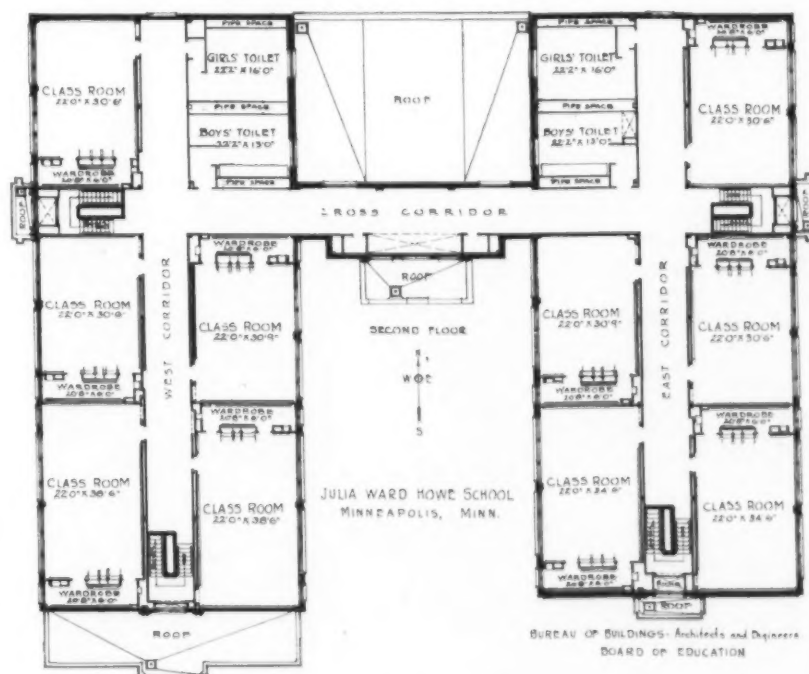
Samuel A. Challman, State Director of School Buildings for Minnesota

The school occupies a large place in a child's life. It is worthy of the best thought that can be centered upon it. All problems connected with it are vitally affected by the conditions under which the work of the school is done. To seek out, therefore, the best means for promoting the physical welfare of the child is to put it on the road to progress, and help develop a healthy mind in a vigorous body. For bringing about such a condition it is essential that the following important factors receive due consideration and application:

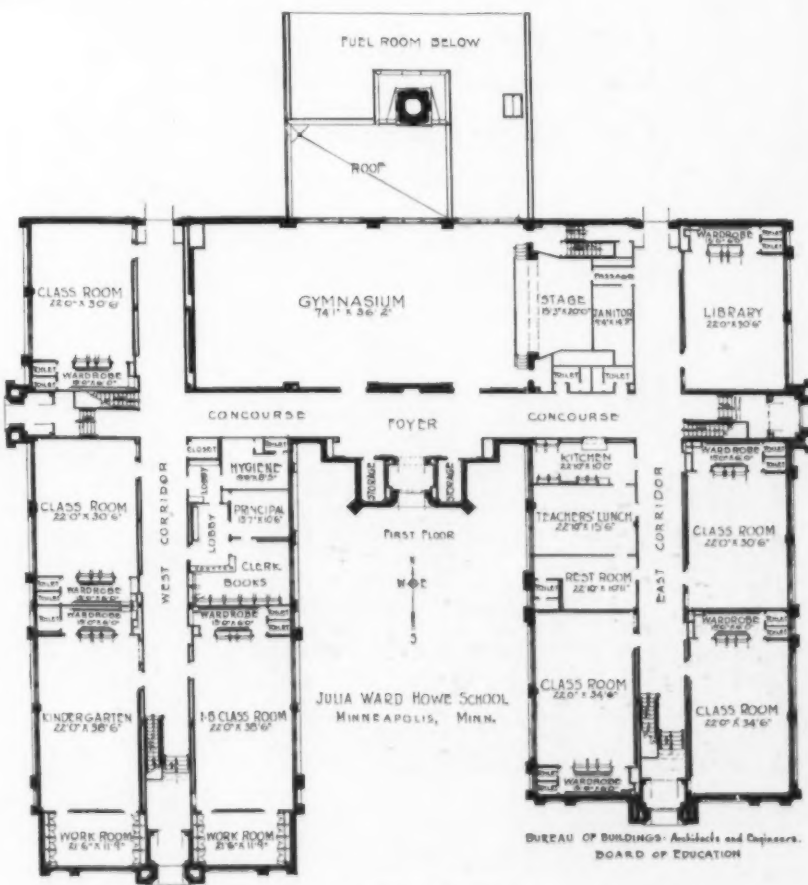
1. Adaptability of the building to a definite educational program.
2. Ample provision for adequate light through windows properly located and also by means of artificial illumination.
3. Modern sanitary facilities.
4. A hygienic system of ventilation.

5. Proper means for safeguarding human life. It is the purpose of this article to show how these conditions have been met in the elementary schools of Detroit, Michigan, and Minneapolis, Minnesota. Both cities have given very careful consideration to all the problems involved and have had their own architectural bureaus work out the plans to fit their educational aims and methods. The Brady school of Detroit, shown in the illustrations, accompanying this article, is a platoon school. The Julia

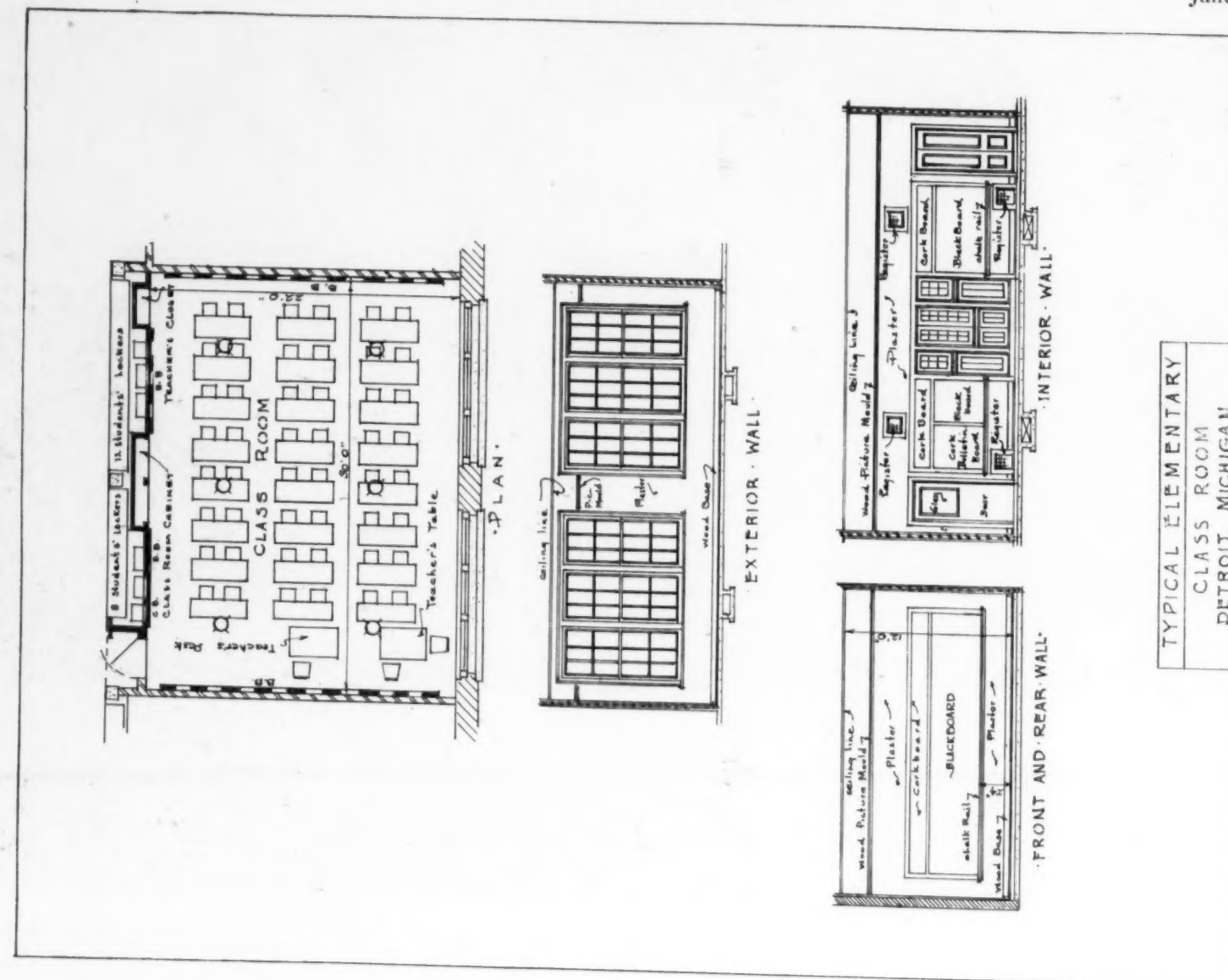
Ward Howe school, also shown in the illustrations, is the usual type of elementary school with a gymnasium, which at times is also used as an auditorium. The floor plans of both schools tell better than words the skillful manner in which the local problems have been met, and the pictures of the buildings indicate how a pleasing exterior has been worked out in each case. Both buildings stand out as personification of service rather than monuments of magnificence.



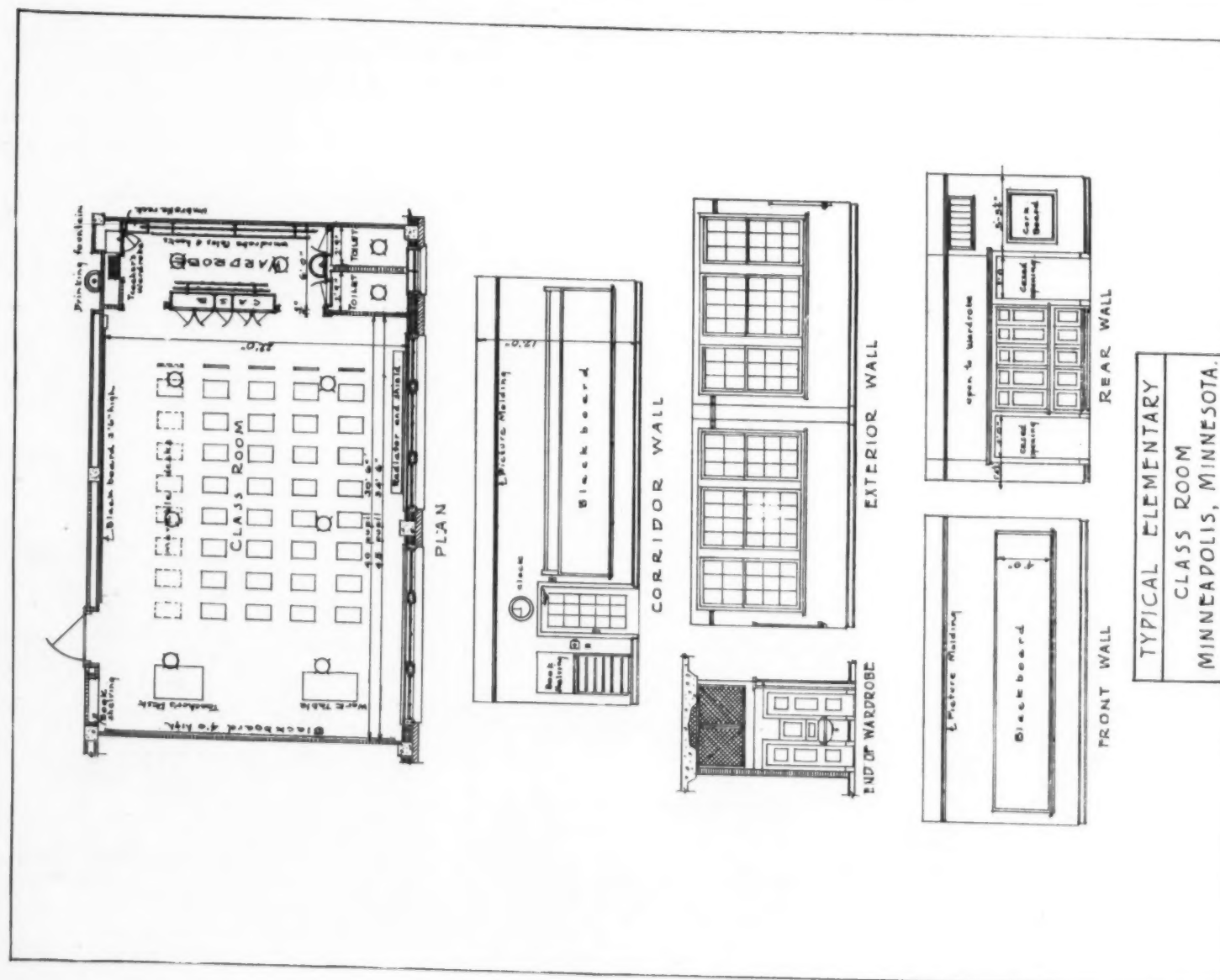
SECOND FLOOR PLAN



FIRST FLOOR PLAN



TYPICAL CLASSROOM, DETROIT, MICHIGAN



TYPICAL CLASSROOM, MINNEAPOLIS, MINNESOTA

BRADY SCHOOL, SIX-YEAR ELEMENTARY, DETROIT, MICHIGAN
Department of Architectural Engineering, Board of Education, Detroit, Michigan

Size of Classrooms

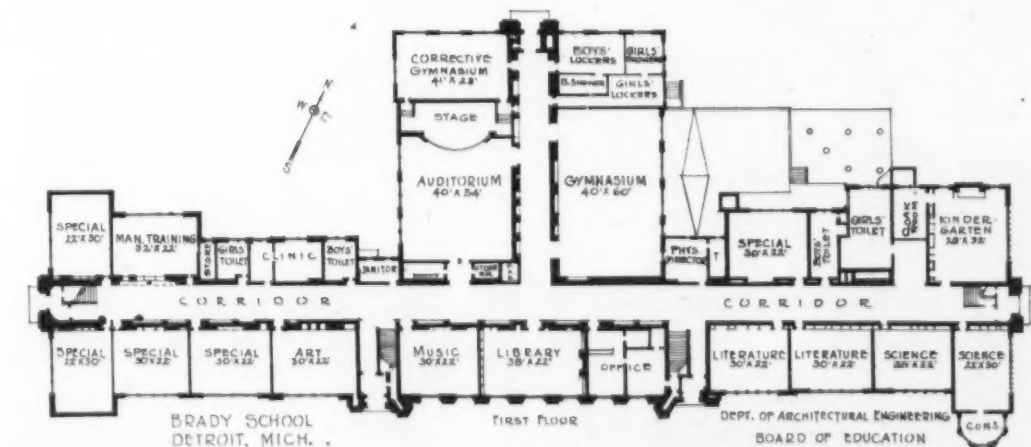
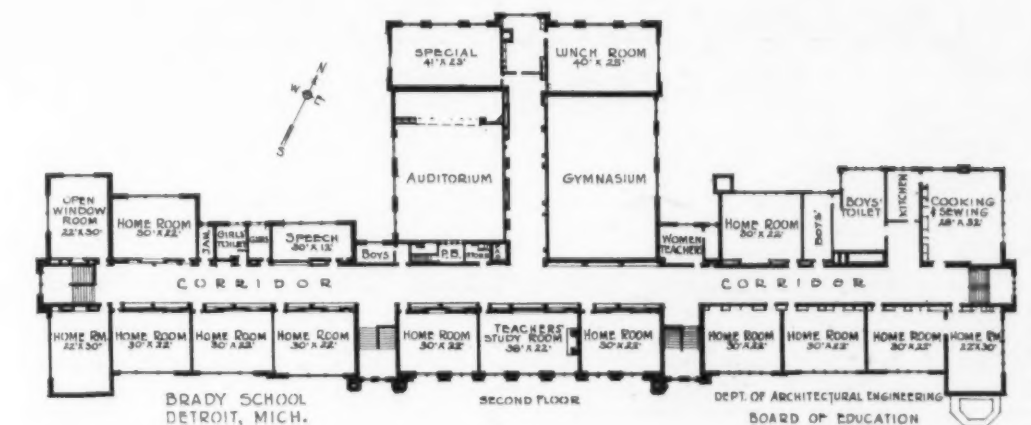
Detroit builds classrooms 22 ft. by 30 ft. and normally seats 40 pupils in each room, making the floor area per pupil 16.5 sq. ft. But it also permits a maximum of 48 pupils in this standard classroom which gives a floor area of 13.75 sq. ft. per pupil. Minneapolis builds classrooms 22 ft. by 30 ft. 6 in. with a normal seating capacity for 40 pupils. It also includes in its elementary-school buildings a limited number of rooms with a capacity for 45 pupils each. These rooms are 22 ft. by 34 ft. 6 in. The floor area per pupil in the 40-pupil room is 16.77 sq. ft. and in the 45-pupil room 16.87 sq. ft. The ceiling height of the rooms in both cities is 12 ft.

Aisles in Classrooms

In Detroit movable tables and desks are largely used. In Minneapolis the usual practice is to put in four rows of single stationary desks and one row of single movable desks. The arrangement of the children's seats and desks naturally affect the width of aisles. In Minneapolis the outside aisle next to the windows is 36 in. wide and the corresponding outside aisle on the opposite side of the room 48 in. The four intermediate aisles are 18 in. or more wide, depending on the width of the desks. In Detroit, where 4-ft. tables are used in classrooms, the outside aisles are 36 in. wide and the two intermediate aisles approximately 24 in. In Minneapolis the distance from the front wall to the first row of desks is 8 ft., regardless of the size of the room. In Detroit this distance varies with the number of seats provided and when the rooms are used to their maximum capacity the distance in front is approximately 5 ft. and the distance in the rear practically 2 ft.

Classroom Doors

The classroom door in the elementary-school buildings in both Detroit and Minneapolis is 3 ft. wide. It is hung so as to swing out from the classroom. In Detroit the door is recessed from



FLOOR PLANS, BRADY SCHOOL, DETROIT, MICHIGAN

the corridor, while in Minneapolis it swings out into the corridor and back flat against the corridor wall. The door used in Detroit has one pane of glass and the one used in Minneapolis fifteen panes. Both types of doors are shown on the interior elevations of the typical elementary classroom of each city.

Natural and Artificial Lighting

The classrooms are unilaterally lighted by means of six windows, grouped in batteries of three. The glass area of the windows is the generally accepted ratio of one fifth of the floor area. The rooms are also provided with ample

(Continued on Page 105)



JACKSON SCHOOL, HEMPSTEAD, NEW YORK.
Ernest Sibley, Architect, Palisade, New Jersey

One-Story Schools in a Village Program of Education

Dr. J. T. P. Calkins, Superintendent of Schools, Hempstead, L. I., New York

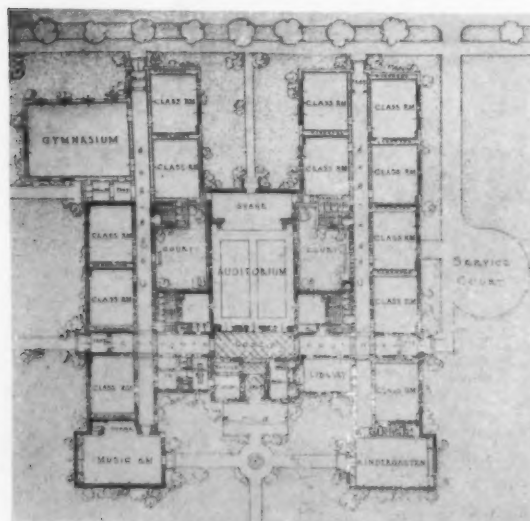
The growth of all municipalities within commuting distance of New York City since the war has been not only one of the most rapid, but also the most interesting social changes in American history. Hempstead shared in this growth and responsibility. The board of education felt keenly its obligation to the many young families moving into the suburb often with the sole motive of getting small children into smaller schools, where the personal interest and contact might be greater, and where there would be greater safety for young boys and girls going to and returning from school. The members of the board of education took the matter up with their school architect, Ernest Sibley, with a request that the architect give the entire matter thorough study. Mr. Sibley, after a care-

ful and intensive survey of local needs and conditions, recommended the purchase of four sites, each located toward the outer boundary of the school district and generally about 90 deg. separated from each other. He recommended the building of one-story schools, in the unit type of construction, with one half to be built at once, and the completion to be determined by the needs of the locality, as an economical measure.

Planning the Survey

In making the survey, the architect took several factors into consideration; namely, the location of present schools, dangerous road crossings, available land, density of population, and population trends.

Mr. Sibley's general plans and survey were accepted and approved. Accordingly, the initial units of the Fulton and Franklin schools were first built, followed by the first units of the



FLOOR PLAN, JACKSON SCHOOL,
HEMPSTEAD, NEW YORK



INNER COURT, LUDLUM SCHOOL, HEMPSTEAD, NEW YORK.
Ernest Sibley, Architect, Palisade, New Jersey



LUDLUM SCHOOL, HEMPSTEAD, NEW YORK
Ernest Sibley, Architect, Palisade, New Jersey

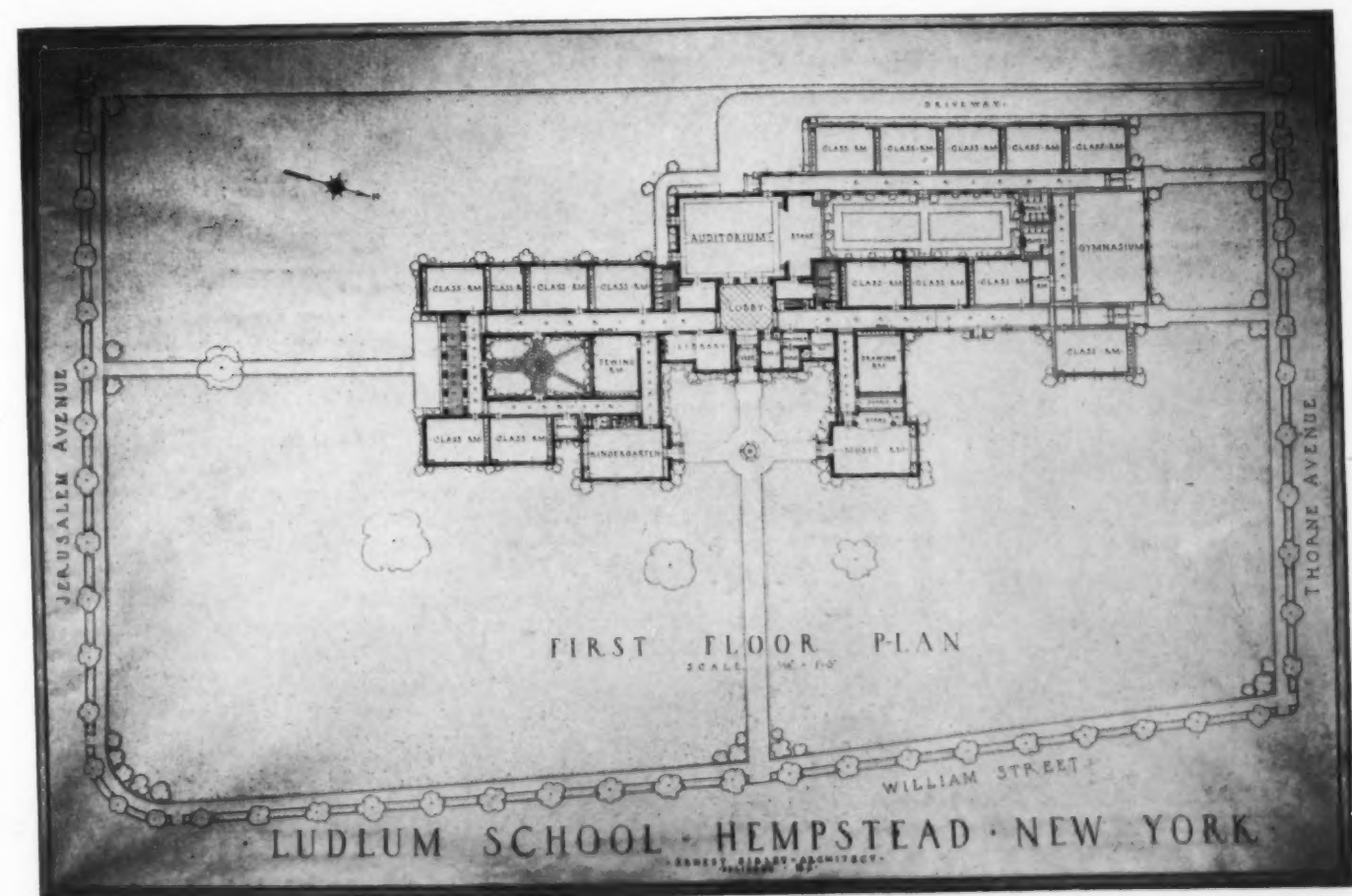
Ludlum and Jackson schools. Since then, the Fulton and Franklin schools have been finished, and plans are under way for the second units of the Ludlum and Jackson schools. These schools will then be complete and will be delightfully homelike with lots of sunshine, beautiful courts for flowers, plants, and shrubs, bird baths and song birds.

Purpose of the Buildings

The primary idea of these buildings is not

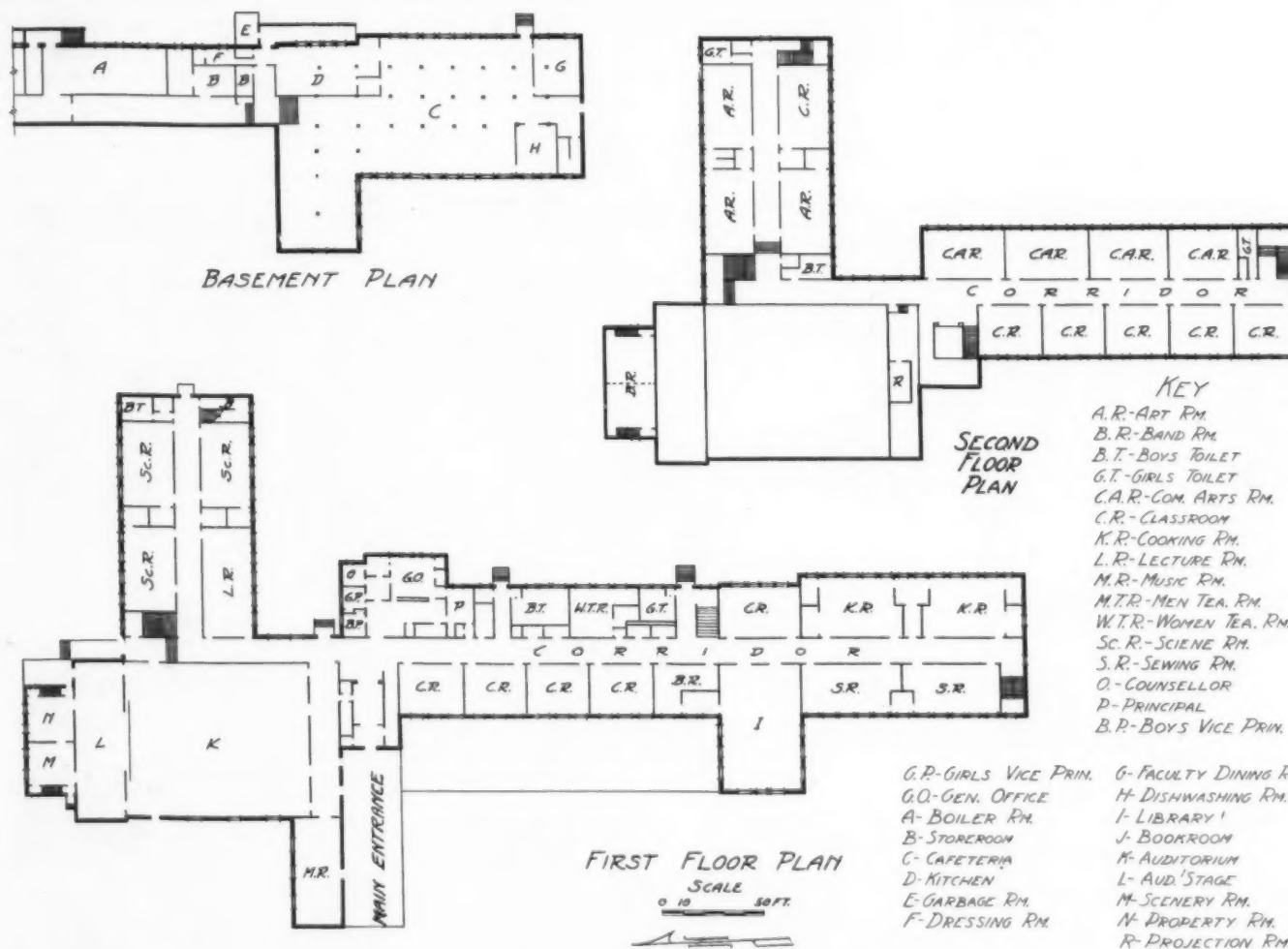
only the teaching of the three R's, but the furnishing of space, equipment, and apparatus in which, or from which, a child may grow naturally, completely, and fully; a place in which he will like to learn and take delight in exploring things. Therefore space is provided for regular class activities and, in addition, an auditorium, music room with stage fittings, a gymnasium, playgrounds and play courts, libraries, and shops, as well as opportunities for design, map making, arts, and crafts, and sewing.

These schools cover the work from the kindergarten through the sixth grade. No advantage would have been gained had these buildings been made two or more stories in height, since the state education department approves plans for only a given number of children per acre of ground. The maximum number has been obtained here. The advantages of one-story buildings for small children have been well demonstrated.

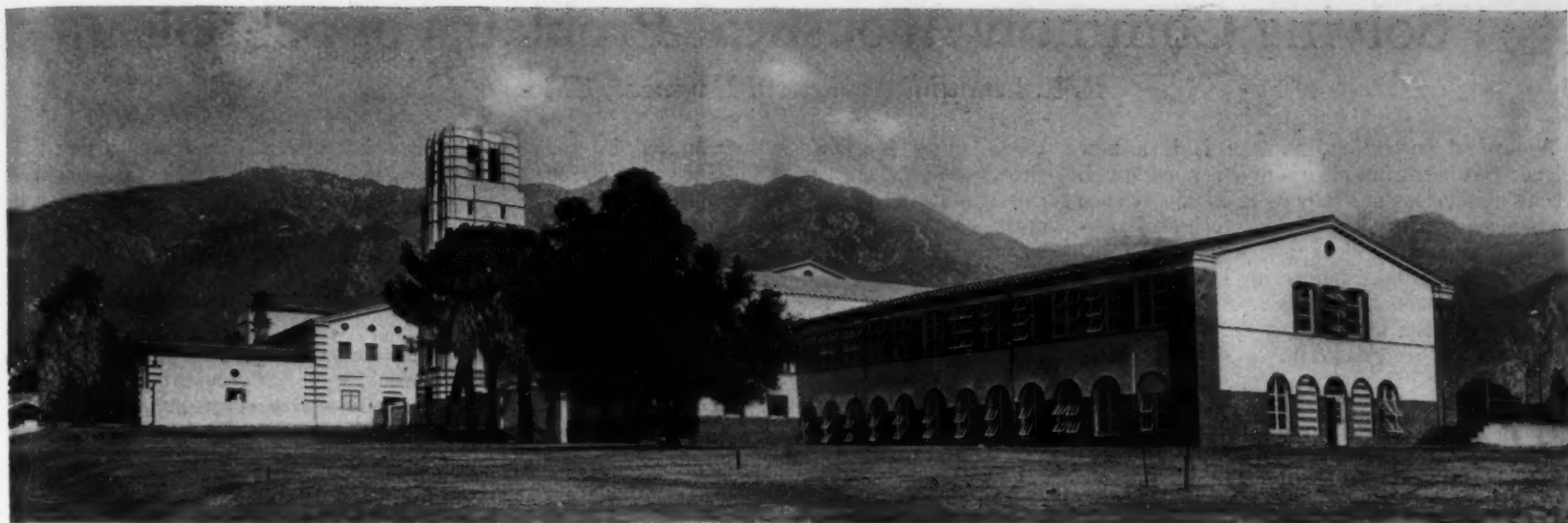




CHARLES W. ELIOT JUNIOR HIGH SCHOOL, PASADENA, CALIFORNIA
Marston and Maybury, Architects, Pasadena, California



CHARLES W. ELIOT JUNIOR HIGH SCHOOL, PASADENA, CALIFORNIA
Marston and Maybury, Architects, Pasadena, California



CHARLES W. ELIOT JUNIOR HIGH SCHOOL, PASADENA, CALIFORNIA
Marston and Maybury, Architects, Pasadena, California

Economy in the Planning and Construction of School Buildings

Henry G. Lehrbach, Consulting Engineer (Formerly Secretary and Business Manager, Board of Education, Pasadena, California)

Every progressive community in America has an opportunity to express its character in the public buildings which it erects. This opportunity is realized most completely in the construction of public schools, for an up-to-date, well-equipped school building is the highest indication of the aspirations of that community.

No longer should the outlay for such construction be regarded an expense, but rather as an investment, from which the community demands certain returns. These returns include a sense of security that the children are adequately and safely housed under healthful conditions, the knowledge that the children are in an atmosphere which stimulates and assists the process of learning, and the added knowledge that the teachers are provided with reasonable facilities for developing an educational program.

Considered in the light of an investment, the planning and construction of school buildings demand the utmost effort from every responsible authority in the matter of economy. Not only must waste be scrupulously avoided, but every detail from the inception of the project to its completion must be made an object of scrutiny for value.

For a number of years it was comparatively easy to secure funds for the development of educational opportunities. The general atmosphere of commercial prosperity was reflected in the financial affairs of the school districts. Future obligations in the form of bonds were voted with enthusiasm. Current taxes were levied on increasing valuation and collected with little difficulty. No more attention was given to the fundamental economic problems of school financing than many commercial organizations gave to their economic affairs, but upon comparatively short notice educational authorities were confronted with a situation diametrically opposite. Sources of revenue were curtailed or ceased entirely. Demands for decreased taxes were heard on every hand, but since taxes were identical with income for educational activities, the demand for reduction in taxation, coupled with defaults, pressed home to the various school authorities the need for an intensive study of financial problems, and "economy" became the watchword overnight.

Due to the very nature of the investment there is more than ordinary opportunity for economy in the planning and construction of school buildings. No school building is justified

unless it is built as a means to achieve an educational program. Conversely, any board of education undertaking a building program without a well-formulated plan of education is embarking on a waste of money commensurate with criminal action, since there are available today many professional leaders who are well qualified to study a local situation and submit educational plans for the acceptance of the board of education.

Once the building program has been developed to conform with the accepted educational scheme, radical changes become prohibitive, because of the tremendous expense of modifying the physical plant. This is well illustrated in the case of a large eastern city which, after considering various schemes, committed itself to the eight-four plan and proceeded to expend millions of dollars for new elementary- and senior-high-school buildings. In the meantime, neighboring cities had demonstrated the effectiveness of the junior high school, but a change in the educational plan was quite outside the scope of possibility due to the tremendous expense and waste involved.

Economy in Building Program

When a city school system decides to undertake a building program economy will result, if a study is first made of the size and number of school plants, both existing and contemplated. If any school buildings can be eliminated by a combination of districts, or if an increase in the size of any plant can be effected, marked economy will result from the decrease in investment charges, operating costs, and maintenance expense. Too much emphasis cannot be placed on the need for a careful study of the utilization of the proposed structures. The buildings will serve the community for many decades and careful consideration of the expenditure of public money demands sufficient time for adequate planning.

No school building is worthy of the effort which does not accommodate the existing activities and also allow for the modifications and changes needed to keep pace with the growing process of education. The needs which must be satisfied by the physical plant of the modern school may be designated under three principal headings. First, sufficient space must be allowed for the pupils, teachers, and other school personnel. Secondly, provision must be made to

house the school activities such as music and art, health, vocational training, auditorium and dramatic instruction. Thirdly, the school plant must serve community uses outside of school hours, which avoids unnecessary duplication of facilities and provides for the use of an expensive plant when it would otherwise stand idle. The advantage to public education of bringing many people in contact with the school serves indirectly the principle of economy.

In arranging for the accommodations of pupils, a thorough study should be made of the far-reaching effect of the size of the classroom, since it is the size which controls the number of pupils assigned to a teacher. Frequently, the size of special-activity rooms modifies the programming of the entire school and limits the number of pupils to be assigned to regular classes. Under these conditions excessive operating costs can be traced to the original planning of the building.

Acquisition of the school site is naturally the first step to be taken. The selection of the site determines the future economy in the planning and construction of the buildings, and this factor must be weighed in connection with the proposed improvement when the site is purchased. How often are soil conditions checked to determine the character and cost of future foundations? How often is the future expense of retaining walls considered? This is well illustrated by an example of one board of education which some years ago insisted on buying school sites that were unsuitable for commercial or residential development. As a result a large high school was located on the top of a steep knoll. That location has cost the district thousands of dollars in expensive construction of the buildings and other development. Another district selected a high-school site on the extreme edge of the residential territory. Because of geographical barriers the school will always be from two to three miles away from the center of the territory it serves, and the cost to thousands of pupils for extra travel will never be mentioned.

Frequently, sites are subject to municipal improvement expense, paving, widening, drainage, lighting, and when purchased in advance of these improvements allowance for them must be made in final consideration of the total costs. Playgrounds must be leveled, fenced, and drained. Demands for such improvements will

(Continued on Page 106)

Solving Common Acoustical Problems of Schools

R. L. Lindahl, Acoustical Engineer, Chicago

Acoustical correction, because it is a new science, has been shrouded in mystery. Although recent discoveries and advances in the science are being constantly published in technical journals, the general public knows little of the underlying foundation. Engineering has often been called common sense applied. Acoustical engineering consists in applying the principles of common sense as related to sound, and these general principles are simple enough for anyone to understand.

Requirements for Good Acoustical Conditions

In order that the acoustical condition of a room may be good, i.e., that the audience in a room can hear clearly and distinctly the sounds to which they want to listen, there are four requirements. The first requirement is that the sound must be sufficiently loud. The second is that the size and shape of the room be adapted for the uniform distribution of sound. The third is that extraneous or interfering noises be reduced to a minimum. The fourth is that the duration of the original sound in the room be somewhere close to an optimum value, usually between 1 and 2 seconds. These requirements are easily explained.

The first requirement that sound be sufficiently loud, is naturally very important. The human ear must be stimulated by sound of sufficient intensity to cause an impulse to be sent to the brain. If we are to understand a speaker, we know that his voice must be strong enough so that we can hear easily and without straining. The manner in which this requirement particularly pertains to schools is that children naturally do not have the powerful voices of adults and very often cannot speak loudly enough to make themselves heard in some large rooms. It is useless to expect them to speak louder, because they cannot generate more power without deviating from a speaking voice. One cannot expect a small child, or one with a weak voice, to be able to speak in a large auditorium. The child simply cannot generate sufficient sound energy to fill the room.

It is possible to reinforce the sound of a speaker's voice by placing hard, sound-reflecting surfaces close to the speaker. By standing immediately in front of a wall of brick, plaster, or wood which does not absorb much sound, the sound striking this wall is reflected out into the auditorium to reinforce the direct sound from the speaker's voice, thus giving the effect of added power. These reflecting surfaces must be placed close to the speaker, or the reflected sound will not follow the direct sound closely enough to reinforce it, but will arrive at a sufficient interval later to distort it. The maximum distance such surfaces should be placed from the speaker is normally 15 to 20 ft. Stages should, therefore, be relatively shallow or a single speaker should speak from within a hard-surfaced stage set, or in front of a hard-surfaced background. Placing absorbent materials around the speaker, as drapes or hangings, is harmful, because they absorb the sound of the voice, and prevent it from being reflected and amplified. A speaker prefers to stand upon a "live" stage rather than a "dead" one, because the reflected sound enables him to tune his own voice properly and gives him the sense of added power.

The reason people sing in a bathroom is because the hard, nonsound-absorbent surfaces amplify their voices and give an impression of power. No one sings in a clothes closet, because the clothing muffles the sound quickly.

The second requirement for good acoustics is that the size and shape of the room be prop-

erly adapted for a uniform distribution of sound energy. In order for sound to be uniformly loud throughout an auditorium, the interior surfaces must be such that they facilitate an even distribution of sound, and do not focus sound waves so that sound is louder in one part of a room at the expense of another part. It has been found that rectangular rooms are generally preferable and that rooms with large curved surfaces cause difficulty by focusing sound waves as curved mirrors focus light waves. When a curved surface causes trouble, the solution lies in either changing the curvature of the surface, which may involve some structural difficulty, or by installing enough highly absorbent material on the focusing surface to minimize its effect.

The size of the room should be adapted to the purpose for which the room will be used. A large orchestra generates a great deal more sound than does a single speaker, and a room that is acoustically acceptable for a large orchestra often is too large for a single speaker. It is impossible for a room to be acoustically perfect for every type of use. It should not be expected that a very small gathering can be held in a large auditorium, and that the acoustics will be as good as in a small room adapted for such an audience. An auditorium should have a properly designed stage so as to aid the performers by beneficial sound reflections as explained in the foregoing. The stage house should not be so large that a speaker's voice is lost in the fly loft.

A third requirement is that extraneous interfering noises should be reduced to a minimum. No one would expect a speaker to address an audience under the Sixth Avenue Elevated, New York City, if trains were constantly passing overhead. The noise generated would be so loud in proportion to the sound of the speaker's voice that he would be unable to talk loud enough to overcome it, and the listener's ears would not be sufficiently sensitive to distinguish the speaker's voice from the general mixture of noise. To secure satisfactory acoustics in a room, it is necessary that the sound to which we want to listen stand out clearly above any other sound. A speaker should not have to compete with a noisy ventilating fan or with the traffic outside.

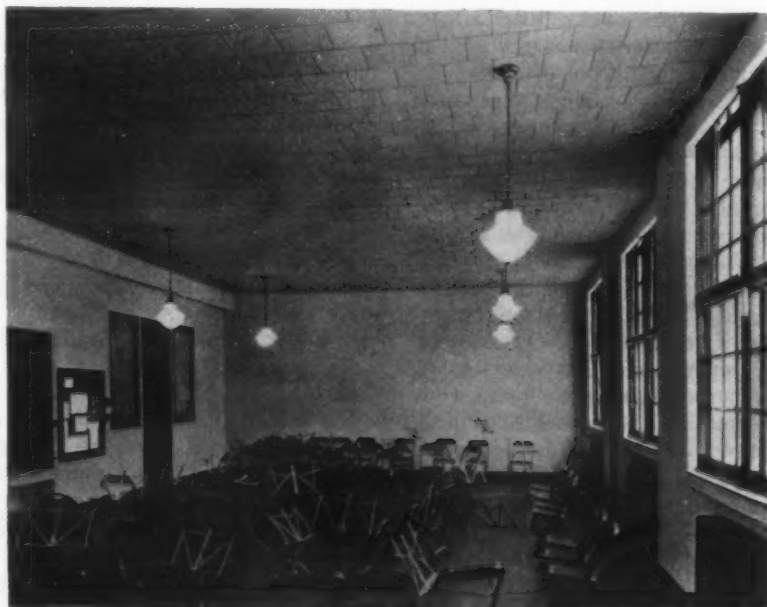
A fourth requirement is that the reverberation time, or the length of time sound lasts in a room, be cut down to a desired value. When a sound is generated in a room it may last for several seconds, depending upon the ability of the interior furnishings to absorb the sound. An

average speaker utters from three to five syllables a second. If sound lasts in a room five seconds there will be from 15 to 25 syllables in the air at one time. The human ear is not sufficiently acute to distinguish from this mass of sound the last syllable spoken. If the time were cut down to one second, there would be but from three to five syllables present and most of these would be so nearly decayed that the last syllable would be clearly audible. The reverberation time in a room is lowered by installing materials which absorb the sound, causing it to die out quickly. This absorbing material can be supplied in the form of upholstered seats, drapes, curtains, carpets, or various commercial acoustical materials. The exact amount of absorption needed to give the result needed can be calculated by formula.

The Correction of Acoustical Problems

The foregoing explains briefly the four requirements for satisfactory acoustics in a room. How these four requirements apply in the solution of common problems will now be discussed. For example, one of the methods usually suggested for correcting acoustical faults is to install a public-address system. In some cases this works, and in others it does not. The function of the public-address system is to increase the loudness of the voice of the human speaker or singer. Where the room, or auditorium, is so large that the person speaking cannot generate sufficient power to make himself heard in all parts of the room, an amplifying system is necessary to increase this loudness. When lack of loudness is the fault, the public-address system is the answer to the problem. If the fault is not lack of loudness, the use of a public-address system may aggravate the difficulty, especially if excessive reverberation is the real fault.

In installing a public-address system, it should be remembered that the purpose is to secure additional intelligibility of speech. If the system is a cheap one and introduces voice distortion, the gain obtained by the increased loudness may be offset by the increased distortion so that the net result is negative. A high-quality system must be used. In placing the loud-speakers of the system in the room, they should not be scattered about, but should be kept within a radius of about 50 ft., and preferably clustered at a single point. If the loud-speakers are more than 60 ft. apart, it is possible for the ear



Acoustical treatment of a music room by installation of sound-absorbent material on ceiling. Such treatment aids in practice by simulating conditions in a larger room.

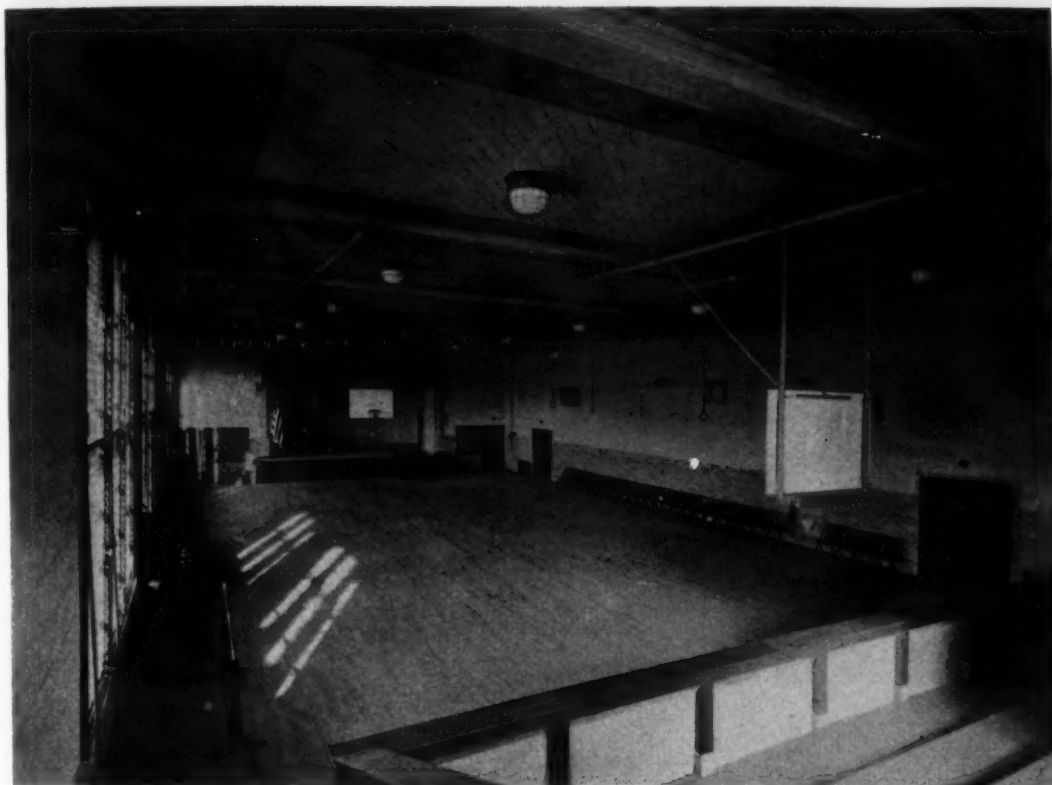


ILLUSTRATION OF GYMNASIUM ACOUSTICALLY TREATED. THIS ROOM IS ALSO USED AS AN AUDITORIUM.

to distinguish the sound from each speaker separately and the effect of an echo may be obtained. The sounds from the loud-speakers must arrive closely enough together so that no overlapping is apparent. The illusion of the sound coming from the person speaking should be maintained by having the loud-speaker near him.

In order to save space, some schools have combined the auditorium and gymnasium by using the gymnasium as a stage. This is an economy of space but unfortunately it is often the cause of poor acoustics in the auditorium. The reason is that a speaker cannot stand in front of so large an open space as a gymnasium, and feel that his voice is reaching the audience. The uncomfortable feeling exists that his voice is being lost in the void behind him. If a deep apron has been built on the stage floor, extending out in the auditorium when the folding doors between the gymnasium and auditorium are closed, it is possible for a speaker to stand upon this apron and have the folding doors behind him as a sound reflector. In cases where this apron is absent, some type of stage set must be provided. This set should be made of hard, sound-reflecting materials to reinforce the voice and to reflect it into the auditorium. It is advisable, if an apron is built, that it be large enough to hold a small orchestra, or a group of performers. If not, a larger sound-reflecting set must be built to accommodate them. A suggested con-

struction is shown in the accompanying sketch (Fig. 1). The folding doors should reach up to the sides of the set so as to close off as well as possible the auditorium from the gymnasium. The walls of the set may be made in sections so that they may be slid or rolled into place and merely hooked or bolted together. The ceiling may be made portable in small pieces, or it can be made in one piece to be dropped from the fly gallery if one exists. A generally rectangular shape is advisable, with possibly a sloping ceiling and slightly splayed sides. A light-weight construction can be made of fiber board on a light wood frame, painting or varnishing the fiber board several coats to kill its sound-absorbing efficiency.

Requests are often made for a soundproof folding door to keep the noise in the gymnasium from reaching the auditorium. There are no folding doors on the market sufficiently efficient to prevent the sounds of shouting in a gymnasium from being audible in the auditorium. The two rooms cannot be used together, if a great deal of noise is to be created in the gymnasium.

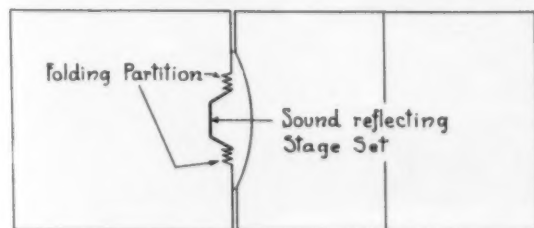
Sound-absorbing treatment in the gymnasium is helpful by cutting down the intensity of the sound, but it may not entirely overcome the difficulty.

The question of proper acoustics in music and band rooms is one requiring careful consideration. A band of a large number of pieces creates such a volume of sound that it usually plays in a large auditorium, or outdoors. In a small practice room, however, it is necessary to simulate these playing conditions closely so that there will not be too much need for change when playing under actual conditions. In a band-practice room which is not very large, the best way to simulate such conditions is by treating the room heavily with sound-absorbing material. This cuts down the loudness of the sound in the room so that the band has to play more loudly to create the impression of volume and tone. If the room were reverberant and absorbed no sound, it would require but a small amount of sound energy to fill the room.

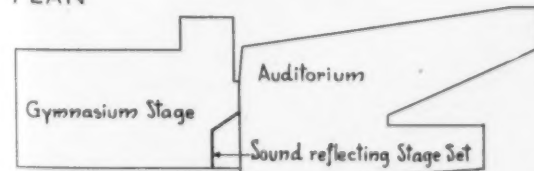
Smaller rooms for practice with small orchestras or solo singers do not require much treatment, because they will not be ordinarily called upon to play under conditions where a great volume of sound is required. Ordinarily such practice rooms should have a reverberation time of from 1.0 to 1.5 seconds as calculated by standard methods.

Difficulty often arises when the sound from music rooms reaches adjoining rooms and corridors. In some cases the difficulty can be overcome by merely soundproofing the existing doors. If the door is a light panel type, there should be substituted a heavy, thick, flush door which closes tightly against the door stops. These stops should be lined with felt or rubber, and a threshold-closing device installed to prevent the transmission of sound through the crack under the door. The hanging of the door is important as more sound may pass around the door than through it, and every crack should be closed. If soundproofing a single door does not solve the problem, double doors should be installed, with possibly a small vestibule. In cases where sound passes directly through the walls of a room, an auxiliary partition is to be used to increase the sound insulation of an existing wall. This can be built by using 2 by 2-in. studs, 16 in. on center, set out 1 in. from the existing wall. Loose sheets of fiber insulating board are placed in the space between the studs and wall, and lath and plaster upon the outside of the studs.

(Continued on Page 85)



PLAN



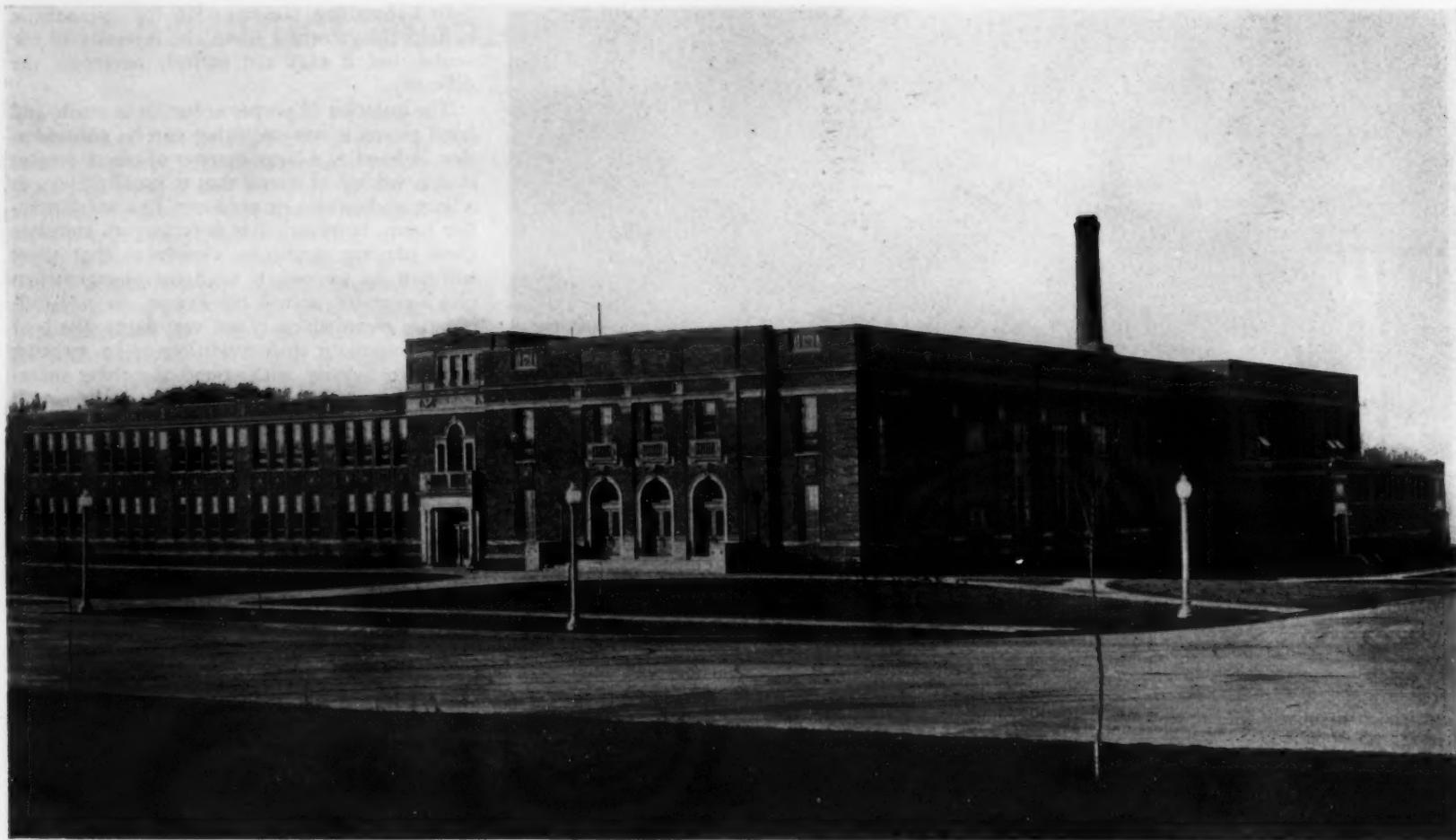
SECTION

FIG. 1

Suggested construction of sound-reflecting stage set for individual speaker or small group of musicians. This set cuts off large gymnasium-stage from auditorium, and provides sound reinforcement for speaker or player.



INSTRUCTION IS EASILY CARRIED ON IN THIS SWIMMING POOL BECAUSE ACOUSTICAL TREATMENT CUTS DOWN EXCESSIVE REVERBERATION



EXTERIOR, MARSHALLTOWN SENIOR HIGH SCHOOL AND JUNIOR COLLEGE, MARSHALLTOWN, IOWA
Dougher, Rich and Woodburn, Architects, Des Moines, Iowa

Successful Use Proves School-Building Value

The Marshalltown Senior High School and Junior College Building

William F. Shirley, Superintendent of Schools

The test of a school building is in its successful use during a period of years. And successful use is the test also of educational, financial, and constructional planning for the new school building, by the school authorities, their advisers, and the architects. During four and a half school years the Marshalltown Senior High School and Junior College has been housed in a building which has proved the wisdom of its planners in the satisfaction which it has given to the school board, the superintendent, the faculty, and the students.

No building is complete or perfect, and the present article will, therefore, suggest judgments on the advantages as well as shortcomings of the Marshalltown high school.

The contracts for the building were let in October, 1925, the building being erected in the years 1925 and 1926. The plans, specifications, and structural- and mechanical-engineering details were furnished by Dougher, Rich, and Woodburn, of Des Moines. The supervision of the construction was carried out by H. E. Reimer, of Marshalltown, and Dean Paul C. Packer, of the College of Education at the University of Iowa, acted as educational consultant.

As usual, there were a number of conflicting interests to be considered in connection with the planning of the building. There was a universal desire for excellence of building construction, and for a building which would accommodate a progressive high-school program. As the building was to serve as a junior college, there was a desire to have an auditorium of sufficient size to enable the building to serve as a civic and community center.

The construction of a building of the type desired which would accommodate a combined enrollment of 800 pupils was rendered especial-

ly difficult, because of the inadvisability of exhausting the debt-incurring power of the district, in view of the rather pressing needs for additional buildings for elementary purposes. Throughout the planning of the building, the idea of a maximum amount of utility as well as the possibility for future expansion was kept constantly in mind. The floor plans, as illustrated, give a rather accurate picture of the provisions for future expansion which contem-

plate the possibility of increasing the student capacity from 800 to 2,100 if necessary.

The site selected for the building is located in the residential district, well removed from the business and factory sections, affording every advantage of air, light, and independence of the school program. As a previously constructed athletic field of very ample dimensions is located four blocks distant, this site of 6 acres gives a satisfactory opportunity for further expansion



GYMNASIUM, MARSHALLTOWN SENIOR HIGH SCHOOL AND JUNIOR COLLEGE, MARSHALLTOWN, IOWA
Dougher, Rich, and Woodburn, Architects, Des Moines, Iowa



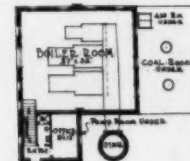
CHEMISTRY LABORATORY, MARSHALLTOWN SENIOR HIGH SCHOOL AND JUNIOR COLLEGE, MARSHALLTOWN, IOWA
Dougher, Rich, and Woodburn, Architects, Des Moines, Iowa

and for playground activities. Due to the slope of the site, the building is two stories high in the front and three in the rear.

On the first floor are located the administrative suite, the faculty office, first-aid room, and the auditorium and gymnasium units. Five classrooms and the study library are also located on this floor. The administrative suite is placed at the immediate left of the main entrance, and consists of a general office with private offices for the principal and the dean of girls. This suite also contains a vault for keeping records, the program clock, and the switchboard. The faculty office, which serves as a workroom for teachers during their free periods, is provided with a bulletin board and individual mail boxes for teachers. The library with shelves for 4,500 volumes and accommodations for 120 students, is located on this floor and within easy access of the principal's office. In addition to standard library equipment, the study library is provided with a private office

for the librarian, and a special room for book repairing.

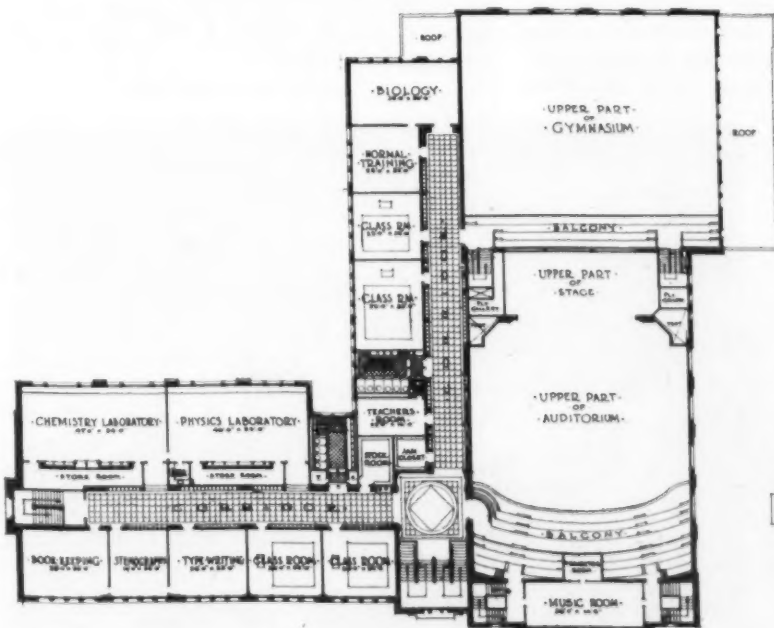
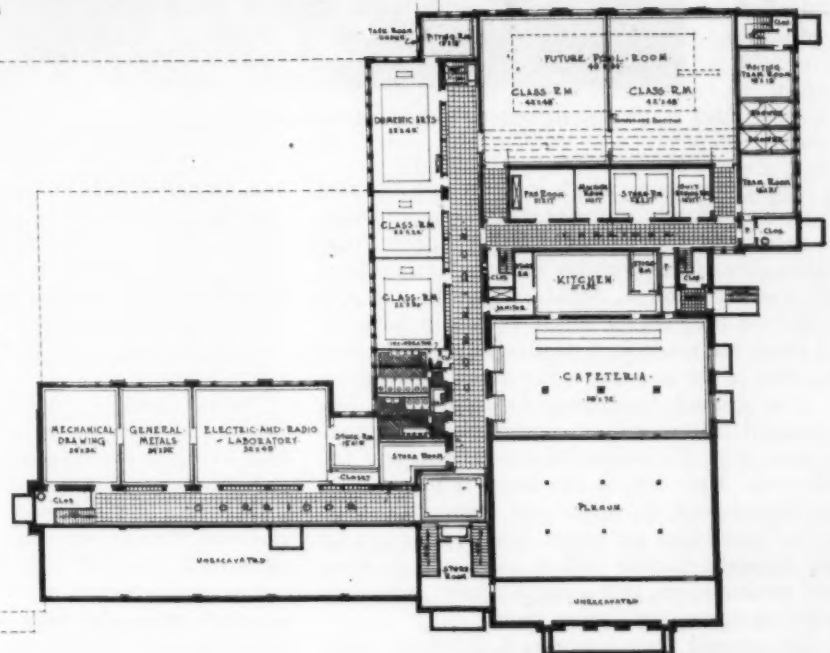
The auditorium-and-gymnasium units are located in the north wing of the building, each unit admitting of use independent of the rest of the building. Three large double doors comprise the public entrance to the auditorium lobby, which is provided with a ticket office and ladies' retiring room to the right, and a check-room and men's retiring room to the left. Three large doors lead from the lobby to the auditorium proper, which has a seating capacity of 1,212. The stage, which is 55 ft. by 25 ft., is provided with dressing rooms at each side, and the orchestra pit accommodates 40 students with instruments. Included in the equipment of the auditorium is a motion-picture booth at the rear of the balcony.



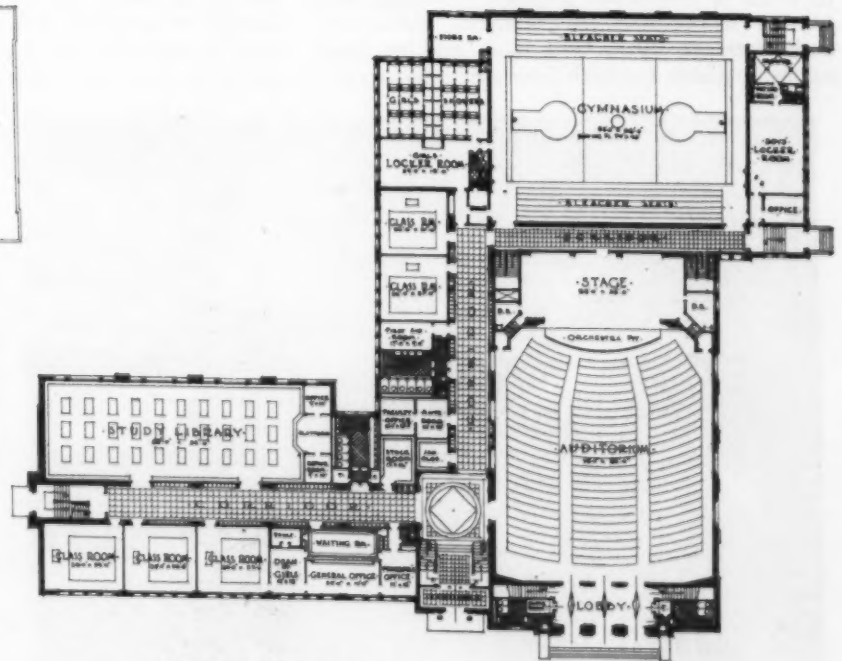
GROUND FLOOR PLAN



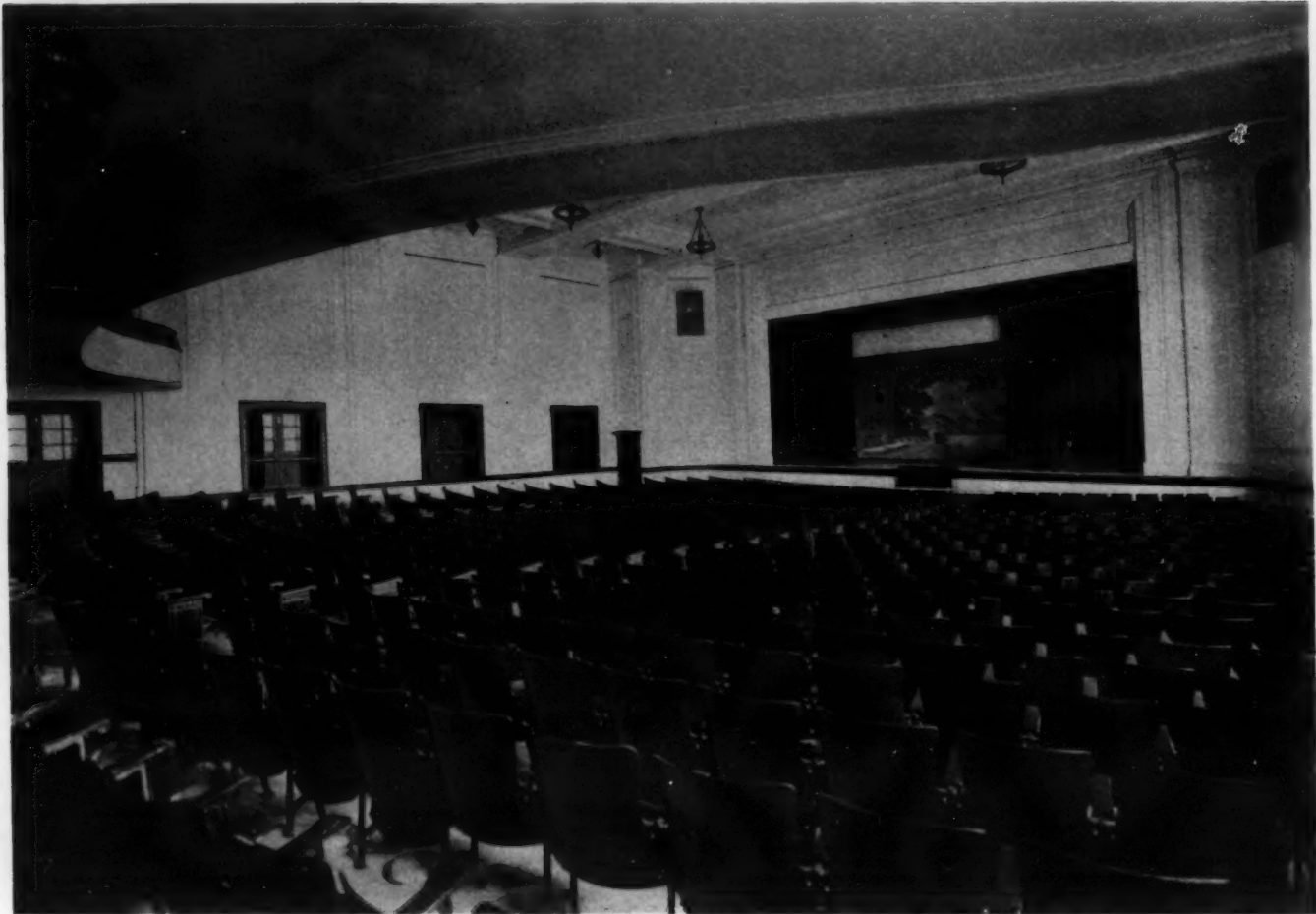
FUTURE EXTENSION



SECOND FLOOR PLAN



FIRST FLOOR PLAN



AUDITORIUM, MARSHALLTOWN SENIOR HIGH SCHOOL AND JUNIOR COLLEGE, MARSHALLTOWN, IOWA
Dougher, Rich and Woodburn, Architects, Des Moines, Iowa

The gymnasium, which is located on the first floor immediately in the rear of the auditorium, is used as an independent unit. A storage room takes care of the portable bleachers in addition to other equipment. Separate showers are provided for the visiting teams. Provision for girls' showers are made in a particularly satisfactory manner as the accompanying illustration shows.

The ground floor provides space for two standard classrooms, a combination domestic-science unit, the industrial-arts layout, and the cafeteria. Here also is the location of a future swimming pool, the space now being utilized as a study hall and art room. The larger room of the domestic-science unit is used as a cooking and sewing room, and a smaller room is used as a dining room, and fitting room.

The second floor contains 8 standard classrooms, a restroom, and biology, chemistry, and physics laboratories. All students' laboratory desks face the instructor's table, making these rooms available for both laboratory and recita-

tion purposes. The construction of built-in fixtures and storerooms eliminates the necessity of any furniture for the purpose of storing equipment, and leaves the floor space entirely available for classroom and laboratory use. A room of adequate dimensions in the rear of the auditorium balcony is used as a public-speaking room.

Toilet rooms for both boys and girls, and janitors' closets, are located on each floor. The lockers which are recessed in the corridor walls, provide locker accommodations for 800 pupils.

The building is constructed of fire-resistive material throughout; the floor construction is reinforced concrete, supported on concrete beams and columns, with load-bearing exterior masonry walls. All floor slabs are designed so that classroom partitions may be moved to alter the size of rooms as necessary to accommodate changes in program. The roof construction consists of concrete slab supported on steel joist, which in turn are supported on a structural

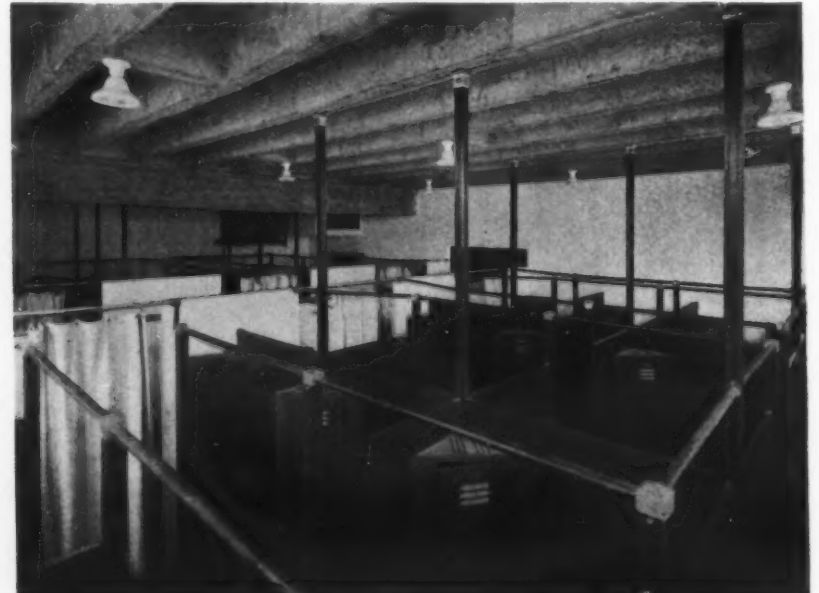
steel frame, consisting of steel beams over the schoolroom portions and steel trusses over the auditorium and gymnasium. The entire roof slab is insulated with roof-insulation board 1 in. in thickness. The construction of a future pool has been anticipated in depths of foundation and structural requirements.

The classrooms are ventilated by means of a unit ventilator in each room; the gymnasium is ventilated by a central fan system. The auditorium ventilation consists of a supply fan, drawing fresh or recirculated air through vento heaters, and discharging the air through a plenum under the auditorium floor. The air enters the auditorium through mushroom ventilators placed under the auditorium seats. Independent exhaust fans provide special ventilation for the kitchens, the locker and shower rooms, and toilet rooms. The entire heating and ventilating system is equipped with dual-automatic temperature control.

(Concluded on Page 90)



AUDITORIUM FOYER



GIRLS' SHOWER AND DRESSING ROOM

SENIOR HIGH SCHOOL AND JUNIOR COLLEGE, MARSHALLTOWN, IOWA
Dougher, Rich and Woodburn, Architects, Des Moines, Iowa

Making New School Buildings Out of Old

The Rehabilitation of Old School Buildings in Sioux City, Iowa

H. C. Roberts, Secretary, Board of Education, Sioux City, Iowa

Sioux City, in common with many other cities, has a number of grade-school buildings which are 40 or more years of age. Some of these buildings, located in districts rapidly decreasing in school population, will be kept in usable condition a few years longer and discarded. They constitute no problem, but the balance are in sections of the city which will in all probability, require grade-school facilities for years to come. The old buildings, while still fairly sound structurally, are obsolete from an educational standpoint, and require a considerable amount of renovation to maintain them in a serviceable condition.

A typical building is two stories and basement, of ordinary construction — exterior and

The problem before the local board of education was to alter and modernize this group of buildings so as to preserve them for years of future service, and at the same time to include the additional facilities needed. A program was adopted four years ago for the thorough remodeling of two or three of these buildings each year. To date, including the work of the present year, eight buildings have been rebuilt. Obviously, no two buildings were treated in exactly the same manner because of varying conditions to be met.

The Cooper and Everett were the schools comprising the program for 1931. The original buildings in both cases were erected in 1887, and both received subsequent additions prior to

latter addition, followed its exterior design so as to produce a uniform appearance. How well the problem has been solved may be judged from the accompanying photographs with the following detail of work involved.

Interior Changes

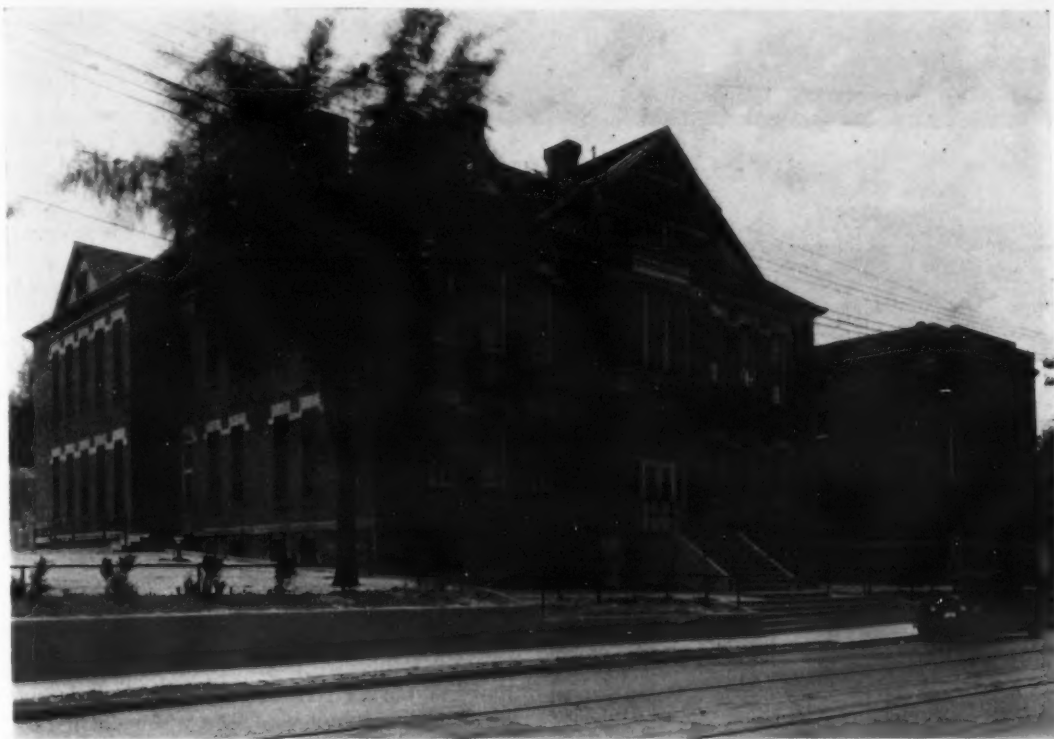
The remodeling is accomplished with the object of promoting the welfare of the occupants — to increase safety, to reduce fire hazards, to facilitate efficiency and convenience in administering the affairs of the building, and to give pleasant environment conducive to good work and good health.

From the standpoint of safety, the boiler and coal rooms are removed entirely from the building and placed in new underground quarters covered with concrete slab at grade level. Where the boilers are in good condition they are moved; otherwise, replaced with new, and in either case equipped with mechanical stokers, it having been found that the right stoker saves fuel to the extent of 25 to 28 per cent over the hand-firing method. Exterior entrance steps are removed and new grade entrances built. Stairways are relocated, widened, and made fire-proof where practical.

For convenience and elimination of waste time, toilet rooms are placed on each school-room floor and private room for each kindergarten. The extra-large classrooms make it possible to partition off rooms of sufficient size for this purpose, and still leave the classrooms larger than present standard dimensions. New toilet rooms are equipped with new plumbing, and for the most part new fixtures. Terrazzo floors and ventilating systems are included. Storage, emergency and teachers' restrooms are arranged upon the main floors by the same procedure. Classrooms with cloakrooms are equipped with built-in wardrobes. A cabinet for books and supplies is included in each classroom.

The buildings are rewired throughout for standard classroom lighting, call bells, and plugs for motion pictures, and separate circuits for electric clocks and radios.

Fire escapes which were accessible only through classroom windows at approximately 30 in. above the floor were lowered to the floor



THE EVERETT SCHOOL, SIOUX CITY, IOWA. A SUBSTANTIAL 14-ROOM BUILDING ERECTED IN 1887. PHOTOGRAPH, JUNE 6, 1931

dividing walls of soft, common brick set up with lime mortar; floor joists, floors, and stairs of wood; high hip roof, some with gables and towers, of wood-truss construction, and covered with cedar shingles; metal gutters and cornices, and exposed down spouts; boiler, coal, toilet, and storage rooms in the basement under classrooms. Classrooms are large, built to accommodate 50 or more pupils, plus a large cloakroom for each room. Access to the building is obtained by means of outside masonry steps, from 7 to 12 in number, which lead to the main floor.

Some of the exterior walls have developed cracks from ground settling; in some cases the heavy wooden roof trusses have weakened and spread, causing the exterior walls to move outward. All corner rooms in the building are lighted by windows on two sides.

Making the Building Serve Community Needs

Obviously, an entire replacement of these older buildings would best serve the needs of the school communities and best fit present-day educational requirements. However, the continuous growth of school enrollment, with consequent requirements of new buildings and additions in the outlying districts has made it impossible, from a financial standpoint, to attempt such a replacement.

1900. In 1917, the Everett received a 4-room addition of modern fireproof construction. The remodeling work, which did not include this



THE EVERETT SCHOOL, SIOUX CITY, AFTER THE REMODELING HAD BEEN COMPLETED. IT CONTAINS 19 CLASSROOMS AND IS MODERN IN EVERY RESPECT. PHOTOGRAPH, SEPTEMBER 4, 1931

level. Glass-panel doors equipped with panic bolts replace the window exits.

Removal of the auxiliary rooms from the basement leaves this floor practically free of its former occupancy. A large portion of the basement is converted into a community room, with approximately 300 seating capacity, to serve for school assemblies, physical training, and community activities. In cases where the basement extended well above the exterior grade level, the ground around the building is cut away and a portion of the basement converted into a classroom entirely or nearly above grade, well lighted and sanitary, but with about 12 to 18 in. less ceiling height than the standard.

Some of the buildings were dependent upon windows for ventilation, while others were equipped with central fan ventilating systems. In the case of the former, classrooms are equipped with unit ventilators. In the case of the latter, exhaust ducts all led into the attic for discharge through roof ventilators. These open ducts extending from basement rooms to attic, constituted a serious fire hazard as the small open space around the ducts provided a flue for fire to spread from the basement or from any floor to the attic area. All openings into the attic are closed and sealed and all openings from the rooms to the exhaust ducts are closed. Grilles are put in the doors of all classrooms. All air is now exhausted through



IRVING GRADE SCHOOL, SIOUX CITY, IOWA, REMODELED IN 1927. IT WAS ERECTED IN 1886 WITH 12 ROOMS. NOW HAS 18 CLASSROOMS.



BEFORE—THE COOPER SCHOOL, SIOUX CITY, IOWA, BUILT IN 1887, WITH 12 ROOMS. PHOTOGRAPH, JUNE 6, 1931.



AFTER—THE COOPER SCHOOL, AS REMODELED, CONTAINS 15 CLASSROOMS. PHOTOGRAPH, SEPTEMBER 4, 1931.

these grilles into the corridors, up the stair wells to the upper corridors, and then through ceiling registers into the attic. The attic spaces are insulated to check heat losses and to effect substantial savings in fuel.

The entire building interior is renovated. Surfacing of sound-absorbing material covered the old ceiling; the walls received new plaster where needed; old floors were resurfaced if the material was good, otherwise they were covered with linoleum or asphalt tile; fresh paint and varnish complete the work of restoration with an appearance of freshness and harmony.

Exterior Improvements

In each case of remodeling, the wooden hip roof, together with gables or towers, are removed and replaced with a flat pitch and gravel, or built-up asphalt roof, the water carried over the entire building and drained into large down spouts within the building and thence to the storm sewers.

The exterior brick is entirely removed and replaced with new impervious brick, set in concrete mortar. Where portions of the old walls are found to be unsafe, rebuilding is done, the exposed inner walls chinked full of concrete mortar, and bonded securely to the new face brick. Corner classrooms having windows on two sides are given additional windows on the long side and the other windows are blanked. The new veneering entirely conceals the closed openings.

Accomplishments

The remodeled building has practically the appearance of a new modern building, the main difference being the window openings and the height of the first floor above the grade level.

Through reduced fire hazards—heating plant and coal storage removal from the building, removal of the wood-truss, shingle roof, new electric wiring, revamped ventilating systems—the insurance rates have been materially reduced, in one case 30 per cent.

Through improvements in construction the life of the building is materially increased, it being certain that these 40- to 45-year-old buildings would still have a period of 30 to 40 more years of safe and efficient usefulness. By an interior rearrangement, additional classrooms are gained to increase the pupil capacity 15 to 30 per cent.

(Concluded on Page 110)

Building a School to Fit a Community

The Solution of the Springfield, Vermont, School Problem

During the school year 1928-29, the school board of Springfield, Vermont, found itself confronted with an acute shortage of space in the high school and the upper grades. The enrollment of the schools had grown to a point that it was considered necessary to add twelve classrooms or their equivalent to the then existing high-school building. A firm of architects experienced in schoolwork was consulted, and a joint study was undertaken by the executives of the schools and the architects. This study indicated that proposed changes in the organization of the school, which included junior-high-school classes, would make an addition to the high-school building little more than a makeshift. It was found that the existing auditorium, the

tained for the central grade school. For administrative reasons, it was considered advisable to acquire this additional land and to move the eight-room central grade school on to a new plot. This arrangement would effectively separate the grade children from the high school; it would provide an adequate playground for the small children, and would leave the high-school site unencumbered.

A careful study of the room and space requirements of the proposed high-school unit showed that the old high-school building could, with a very few changes, be remodeled for junior-high-school purposes. The new high-school building could then be easily arranged to include an adequate auditorium, a gymna-

program of daily use. All this could be accomplished by properly joining the new building to the old.

A further inducement for locating the central high school on the original site was the thought that no heating plant need be built. The John T. Slack Corporation, a large manufacturing establishment, is located at the bottom of a steep bank, which drops about 70 ft. from the rear of the school lot. It was possible for the school board to contract for the purchase of steam at a price so favorable that any other arrangement would be sheer waste.

The Plan of the Building

A distinctive feature of the plan of the Springfield High School is the arrangement of the building for easy circulation between the departments. The office of the superintendent of schools and of the principal are located near the main entrance. The social center use of the gymnasium and of the auditorium have been provided for in such a manner that it is not necessary to open the whole building, or to interfere in any way with the school program. The gymnasium and the shops are located in a wing separate from the classrooms, thus doing away with noise and confusion which occur when these noisy departments are located near classrooms.

The building is of open-plan design, insuring plenty of light and air, as well as good circulation, and means of egress. The exterior design is distinctly Georgian, with well-balanced pediments on either wing, the recessed central feature forming a pleasing courtyard effect.

The construction is fireproof; the foundations are of concrete; the exterior walls are faced with selected common brick; the corridor and gymnasium walls are of buff brick. The floor of the gymnasium is of maple, with the floor in the corridor, office, and classrooms covered with linoleum; tiletex is used for the ground floor, the classrooms, and the aisles in the auditorium and laboratories, while the remainder of the ground floor, the locker and shower rooms, and the auditorium floor are of granolithic; the vestibules, toilets, main lobby, and lobby stairs are of terrazzo; the interior walls, are of brick,



TYPING ROOM, HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT
Haynes and Mason, Architects, Fitchburg, Massachusetts

gymnasium, the laboratories, and the shops were inadequate for the existing program and would be quite useless for any contemplated expansion.

The problem resolved itself into the following five major problems which the school authorities thought it necessary to solve:

1. How can the program for a junior and senior high school be provided best to avoid duplication of facilities and wasteful expansion of the several departments?
2. How can the best possible use be made of the present school plant and of the present site?
3. Is the purchase of an entirely new site advisable?
4. How can the probable growth of the community and of the school enrollment be anticipated both in the present building and in arranging it for further expansion?
5. How can the entire program be handled most economically, considering the present and future financial ability of the school district to pay for the school plant?

A survey of the town to find a new location for a high school disclosed the fact that the rugged and hilly topography of the community makes the selection of a large school site a difficult one indeed. In fact, the quite level site occupied by the old high school and by a central grade school were found to be the best suited from the standpoint of play space, central location, accessibility, and general suitability. It was found that land immediately across the street from the high school might be ob-

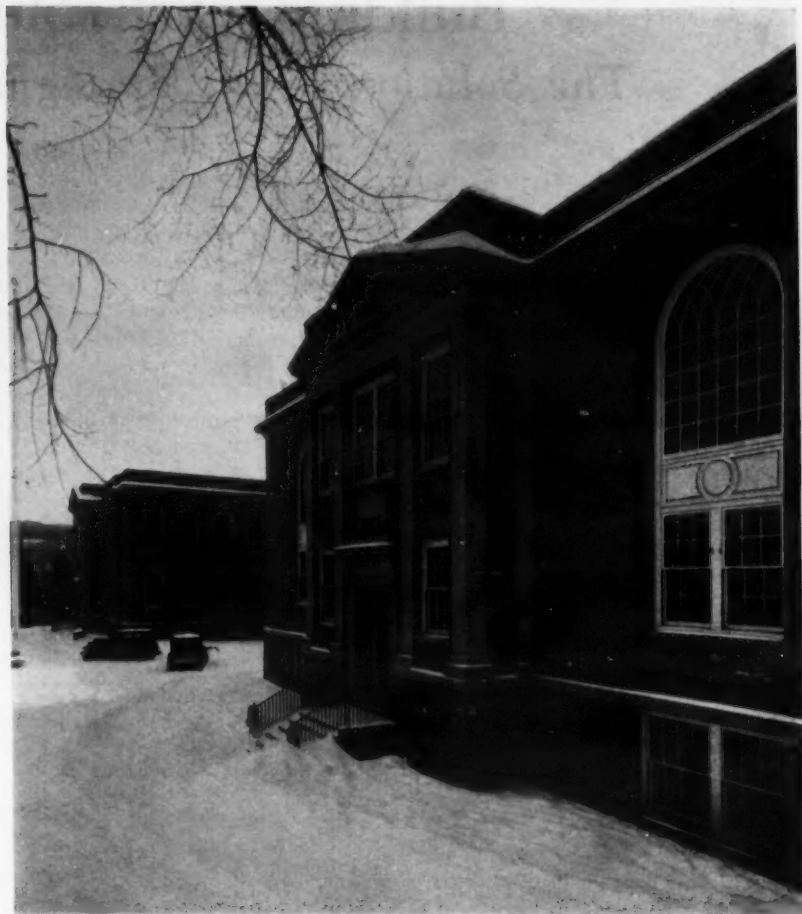
sium, shops, and home-economics rooms which would serve both the junior and senior high schools at a minimum first cost and a maximum



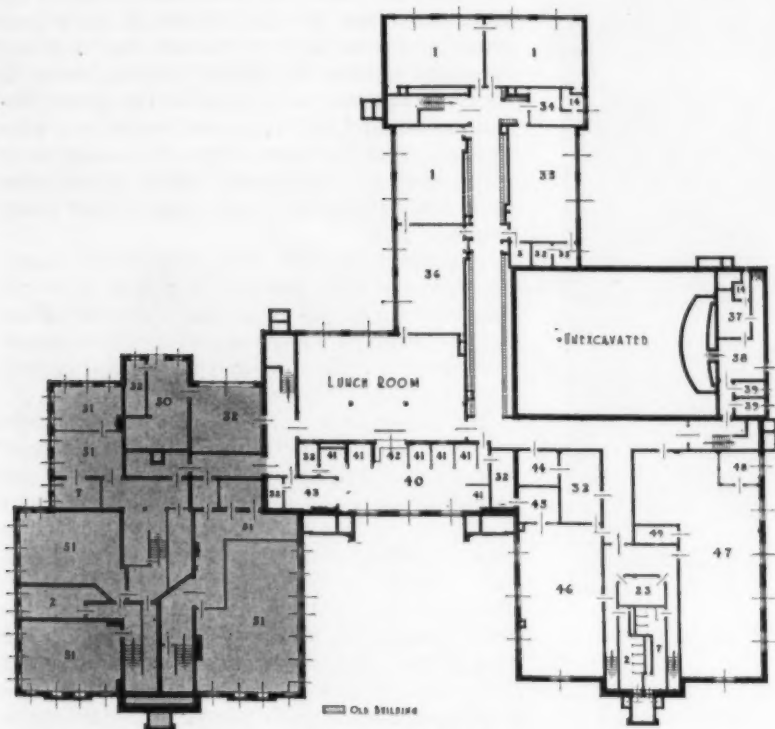
BIOLOGY LABORATORY, HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT
Haynes and Mason, Architects, Fitchburg, Massachusetts



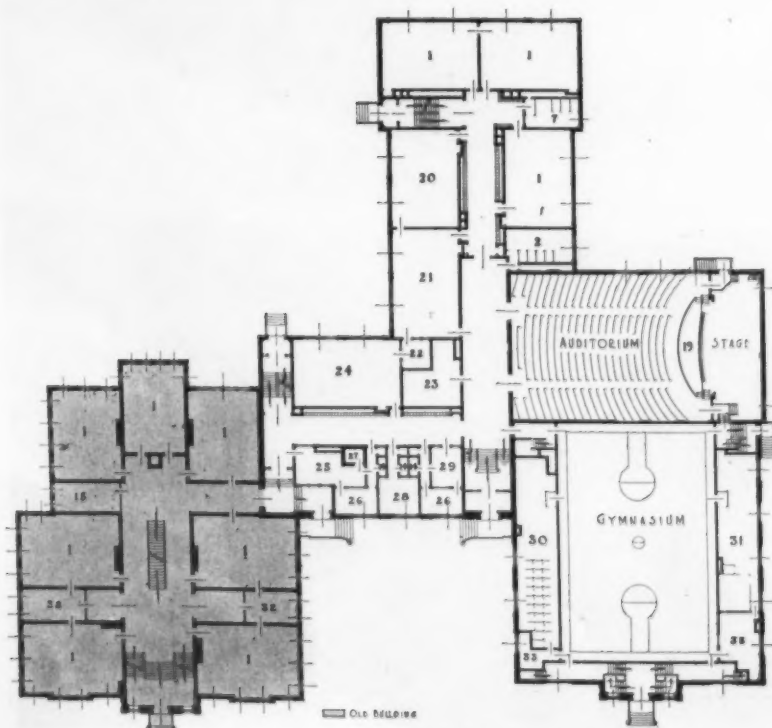
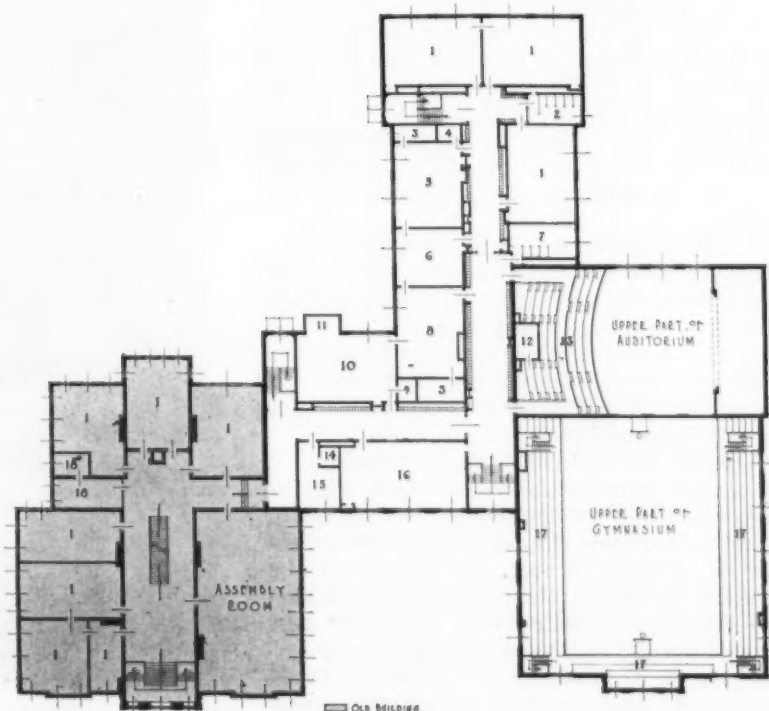
AUDITORIUM LOBBY, HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT



ENTRANCE DETAILS (GYMNASIUM WING IN FOREGROUND), HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT



GROUND FLOOR PLAN

FIRST FLOOR PLAN
HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT
Haynes and Mason, Architects, Fitchburg, Massachusetts

SECOND FLOOR PLAN

SCHEDULE OF ROOMS

- | | |
|-----------------------------|-----------------------------------|
| 1. Classroom | 27. Vault |
| 2. Girls' Toilet | 28. Men Teachers' Room |
| 3. Preparation Room | 29. Principal's Office |
| 4. Dark Room | 30. Girls' Locker and Shower Room |
| 5. Physical Laboratory | 31. Boys' Locker and Shower Room |
| 6. Lecture Room | 32. Supply Room |
| 7. Boys' Toilet | 33. Instructor and Apparatus Room |
| 8. Chemical Laboratory | 34. Clinic and Nurse's Room |
| 9. Display Closet | 35. Free Hand Drawing Room |
| 10. Biology Laboratory | 36. Mechanical Drawing Room |
| 11. Conservatory | 37. Dressing Room |
| 12. Picture Booth | 38. Property Room |
| 13. Balcony | 39. Electric Room |
| 14. Toilet | 40. Domestic Arts |
| 15. Women Teachers' Room | 41. Kitchenette |
| 16. Library and Study Room | 42. Service |
| 17. Gymnasium Balcony | 43. Living Room |
| 18. Office | 44. Janitor's Room |
| 19. Orchestra Pit | 45. Fitting Room |
| 20. Stenography Room | 46. Sewing Room |
| 21. Typewriting Room | 47. Manual Training Room |
| 22. Model Office | 48. Finishing Room |
| 23. Check Room | 49. Tool Room |
| 24. Bookkeeping Room | 50. Machine Room |
| 25. Superintendent's Office | 51. Unassigned Room |
| 26. Private Office | |



HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT
Haynes and Mason, Architects, Fitchburg, Massachusetts

tile, and metal; the main-entrance lobby has a marble wainscot. The interior trim is of wood, the exterior trim of cast limestone and granite, and acoustic plaster has been used in the type-writing room and the auditorium.

The lockers are built into the corridor walls. Where bubbler niches occur in the corridor, they are constructed of marble. The remainder of the corridor walls are of buff brick.

The classrooms and other instructional rooms are equipped with the necessary slate black-

boards, display boards, and where necessary, with map rails.

The building is heated by means of a vacuum-steam system, equipped with automatic temperature control. Unit ventilators are located in all classrooms and other instructional spaces. The plumbing is of the modern heavy-duty type, with sanitary chrome-plated fittings and durable porcelain fixtures. Mixing valves are provided for all showers. The toilet and shower-bath partitions are made of Alberene stone.

The electrical equipment includes complete wiring for lighting, with fixtures so distributed that adequate light will be had on all working space. A program clock and intercommunicating telephone system, a radio, power lines for individual motor drive in the shops, and stage lighting for ordinary school events are among the features of the electrical system.

The architects have provided rather complete storage space for teaching materials and equipment for janitors' supplies, etc.

(Concluded on Page 93)



AUDITORIUM FROM BALCONY, HIGH AND JUNIOR HIGH SCHOOL, SPRINGFIELD, VERMONT
Haynes and Mason, Architects, Fitchburg, Massachusetts

THE AMERICAN School Board Journal

EDITORS:



WM. GEO. BRUCE

WM. C. BRUCE

Relation of Architects and Boards of Education

THE school authorities, as a rule, have no occasion to concern themselves with architects and architecture until the question of providing a new school structure really comes before them. Where a large city school system is constantly planning and constructing school buildings, a special department looks after the architectural and construction service. Where a community occasionally builds a schoolhouse the question of procedure becomes a matter of immediate interest and concern.

And here it frequently happens that neither superintendent nor board of education have had any direct experience in the preliminaries leading to the planning and construction of a schoolhouse. And yet it becomes highly essential that information be gained as to initial steps to be taken, clarification as to the kind of building required, and the method and manner of accomplishing the project to be undertaken.

This brings into consideration the selection of architectural service. Such service may be at ready command, but it is more likely that the right service is not at hand. It must be sought when it comes to competent architectural service. Architects and building contractors may be found in many cities. Some have had experience in planning and constructing schoolhouses, many more have not.

At this point it may be stated that the method of securing the services of an architect has changed considerably over that employed years ago. It was then that the architect came forward with an attractive front elevation and a set of floor plans, and sold himself, and his plans to the school authorities. In that case the school was fitted into the plans, instead of fitting the plans to the needs of the school.

That method is not employed to any considerable extent at the present time. The planning of a new schoolhouse no longer begins with the architect. It begins with the school authorities. The dress-pattern style of school plan is a thing of the past. Certain standards are applicable to certain phases or parts of a schoolhouse, the planning, as a whole, of a schoolhouse that shall serve the exact purpose for which it is constructed does not lend itself throughout to the conventional or standardized plan.

This is due to the fact that, in the nature of things, no two schoolhouses can be exactly alike. Site peculiarities, environment, size and kind of school, character of population, prospective growth and expansion, building material obtainable—all these call for individuality in structural expression which conforms to the specifications that have been worked out.

The logical starting point in the planning of a school structure lies with those who will occupy and manage the school. Headed by the superintendent they must approach their task from the housekeeping side, stand prepared to suggest size and capacity, the orientation of floor space, and the special utilities to be embodied.

It then remains for the architect to familiarize himself with the operation of the school plant, and to adapt his plans in a manner that will facilitate the operations of the school and insure the highest measure of convenience and comfort. His art begins when he translates into practical terms the exact needs of the school into a utilitarian schoolhouse.

The thought that the planning of a schoolhouse must begin with those who operate the same rather than the architect has found eloquent recognition by the leading schoolhouse architects themselves. They invariably, in planning an important school structure, employ expert service to determine upon the specific educational

labors to be carried on therein, and thus meet in the largest measure possible, the exact uses and requirements of the structure.

The relations which have been established between school authorities and architects are keyed upon a higher plane than ever before. This is due to the fact that there is a better understanding as to the requirements of a modern school structure. The average school superintendent is well informed as to what constitutes a good schoolhouse. The board of education proceeds to its task with greater deliberation and circumspection. The architect knows more nearly what the demands of education are, and is prepared to satisfy them.

The competitive idea is less popular than it was in a former day. The board of education discovers the architect who can point to evidences of his work, expressed in stately and utilitarian schoolhouse structures, and proceeds to employ him. If conditions render expedient the employment of a local architect, then the expert school architect, of national reputation, is employed in an advisory capacity.

It follows, too, that the planning and construction of a schoolhouse is no longer the task of any architect who happens along. The specialist is on the scene. The architect who specializes on factory plants, business blocks, churches, movie houses, or residential structures, may know little or nothing about the requirements of a modern school structure.

Thus, it should finally be said that school architecture has become highly specialized. The marvelous high- and elementary-school structures which have been reared in nearly all parts of the United States in recent years give ample testimony to the exceptional skill which has gone into that field of service. While they excel in exterior design and beauty, they also embody in point of interior arrangement and appointment, the maximum measure of the utilitarian and practical as well as the tasteful and ornate.

Who Shall Rule—The School Board or the Superintendent?

AMONG the more progressive departures in the field of school administration in the past two decades are those which have clarified the scope and function of the superintendent of schools, and the relation he bears to the board of education. They recognize the superintendent as the educational expert of the school system, and accord to him the initiative in all matters of a professional character, subject to the approval of the board of education.

All this sounds simple and would lead to the thought that no misunderstandings could arise as to the prerogatives of the superintendent on the one hand and the board of education on the other. When it comes to the selection of professional service the superintendent nominates, and the board approves or disapproves. The same procedure follows in the selection of textbooks and the adoption of a course of study.

Here it becomes clear that the power of initiation, of proposal or nomination is clearly lodged within the authority of the superintendent. The board of education retains the whip hand, in that it may ratify or it may exercise the power of veto. The superintendent may keep on making proposals, recommendations, and nominations until doomsday, only to discover that none of these will become effective without the sanction of the board of education.

The trouble arises where the one invades the prerogatives of the other. Vexatious situations may arise where there is the temptation on the part of the board members to placate the superintendent in the belief that unless that is done he placates the board of education.

Pittsfield, Mass., affords a case in point. The school board appointed an assistant superintendent of schools without the approval of Supt. John F. Gannon. The city solicitor pronounced the action illegal. Chairman John T. McDonald, of the board, holds that "if the superintendent has the powers the city solicitor in his rulings would give him, then there is no need of a school board and the people are deprived of all representation. In the present instance the superintendent refuses to carry out the will of the majority of the board. If he can continue to do this he will be the supreme dictator. This is setting a mighty dangerous precedent. I hope the electorate will understand the grave danger in this attempt to centralize all power in one man."

All this sounds reasonable and logical and, no doubt, Chairman McDonald is absolutely sincere in his contentions. But, his position is at once unreasonable and illogical when it is remembered that if the superintendent is to be held responsible for results, he must have a voice in the selection of his lieutenants. In granting him the power of initiative, it by no means follows that the superintendent placates the board of education. That body still retains the final voice.

The laws governing the official relations between the several school-administrative factors were thrashed out to the fullest before many legislative bodies before they found acceptance. While educational leaders in most instances proposed from time to time the changes which finally fixed the prerogatives of the school superintendent these changes were not made without the knowledge and consent of the citizenship that served in a board-of-education capacity. The adjustments thus evolved, and now generally recognized in the field of school administration, have demonstrated their utility and practicability.

Does the Nation Lack in Educational Leadership?

IF THE question of leadership in popular education, as applied to this country, is not asked and answered with greater frequency, it is probable because there is a popular belief that such education is carried along upon safe and sound lines. If reasonable progress has been achieved then it also follows that there has been leadership which has enjoyed a substantial following. The splendor of the structure, as a whole, would demonstrate that only wise direction and intelligent administration could have reared it into being. Somewhere in the American schools there must have been leadership that was virulent, compelling, and effective.

Thus, one may wonder why anyone should question the presence of leadership in the educational life of the nation, and if so, whether there may be a legitimate divergence of opinion as to what really constitutes leadership. True, the great army of classroom workers in the field of popular education may look up to their leaders, while the college professor may look down upon these same leaders. The former gain inspiration and professional strength from the educational leaders while the latter may be amused or bored by them.

"In the dozen largest cities of the country there are not more than four or five superintendents who continue to manifest anything that can honestly be called leadership in education." So said Prof. Thomas H. Briggs of Columbia University in a recent public address. And then he adds: "It is true that there is an unfortunately high 'mortality' among school administrators, but observation will reveal how seldom it is that one loses his position because of inefficiency in educational leadership. It is quite the contrary, in fact, for the administrator who attempts to make any significant educational changes constantly walks a precarious path. Realizing this, superintendents of school systems find it easy to substitute for educational leadership, expertness in personal relations, budgetmaking, building planning, and lubrication of the wheels of the operating machinery."

It is evident that the learned critic has in mind a distinction between a school administrator and what he terms an educational leader. The school superintendent, for instance, who "does not attempt any significant educational changes" is merely an administrator who concerns himself with "budgetmaking, building planning, and expertness in personal relations." Thus, the superintendent who is an administrator, no matter how successful, is not to be regarded as an educational leader of the type Professor Briggs has in mind.

In the light of the facts, the indictment is neither true nor just. An examination of the list of the fifty largest cities of the United States reveals the fact that all of the educational leaders in their own field of labor, many of them constituting a strong and dominant force, and some of them brilliant and exceptional. To this statement may be added the fact that many of them have risen to national distinction.

Again, the real leaders may be found in the smaller school-administrative units. They assert their leadership not only at home but rise in educational councils of their state with definite direction and momentum. Out of the confusing exigencies which beset their sur-

roundings they lift the major problems into clear view and offer the solution.

One of the characteristics of American school life is found in the fact that leadership migrates from the rural to the urban, from village to town, from the smaller to the larger centers of population. The discriminating attitude of those in control of the larger city school systems has brought into service the exceptional school expert and leader.

Thus, the American cities have, in the main, school systems which are highly efficient and under most capable leadership. To claim otherwise is to depart from truth and fact. The high standards which the system of popular education has attained in this country attests fully to the fact that the leadership which has guided it has been enthusiastic, brilliant, and effective.

School Administration and Home-Town Business

AMONG the trends in school-administrative policies and departures, influenced by the economic disturbance which afflicts the whole country at this time, is found a stricter attention to home-town interests. Self-preservation and self-protection, along material lines, are quite universally observed.

Thus, it is quite common that the board of education, in awarding building contracts specifies the employment of local labor, in selecting teachers gives preference to the home-town girl, in purchasing supplies and equipment favors the local merchant.

This self-assertion is entirely in keeping with the decentralized plan of managing the schools of this country. Every community determines for itself what schools shall be built, who shall manage them, and how they shall be managed. The strength and success of that system springs from the fact that the schools are thus kept close to the citizenship—the citizenship that pays the cost and is vitally concerned in their efficiency.

That being the status, the American people have consistently opposed all attempts at direct state or national control. While the schools are fundamentally the concern of the state, which has enacted laws designed to insure uniformity and standards, there has been a wide latitude in the matter to local initiative and control.

In the light of fixed conceptions on the relations between state and community in the government of the schools, it follows nevertheless that the attempts to restrict local self-assertion and to set up a system of paternal or centralized control, crop out in the most unexpected manner and form.

Thus, some lawmakers in North Carolina conceived the idea that the local authorities did not know how to purchase supplies and equipment. The state must step in and establish a purchase and contract division which aims to control local purchases. In Virginia the state superintendent has asked for bids on erasers and chalk. The local school authorities are to be guided by the state authorities on the kind of erasers and chalk to be used and the price to be paid for the same.

Viewing the proposal in its broader aspects it must be admitted there may be some economy in quantity purchases. A few dollars may be saved. On the other hand, the local authorities have surrendered something which is more precious than a few paltry dollars. They have sacrificed something of their self-respect. The personnel of the local school system is sufficiently expert to purchase the things needed in or about a schoolhouse.

But, aside from the minor economies that may be involved in quantity bargaining by the state, there is, after all, the larger question; namely, the principle involved in the matter of control. If the state can dictate the kind of chalk and erasers, pencils, and pads that shall be bought for the schools, it may with equal consistency say what style of brooms, mops, and slop buckets shall be employed.

It would seem that the individual self-assertion and self-reliance which has characterized the administration of the American schools, and which has rendered them highly successful, ought not to be bartered and surrendered for a few ducats in order that centralized or paternal control may be established. Such a procedure is inconsistent with the principles upon which American education is founded.



BOARD-OF-EDUCATION BUILDING, CLEVELAND, OHIO
Walker and Weeks, Architects, Cleveland, Ohio

Cleveland's Board-of-Education Building

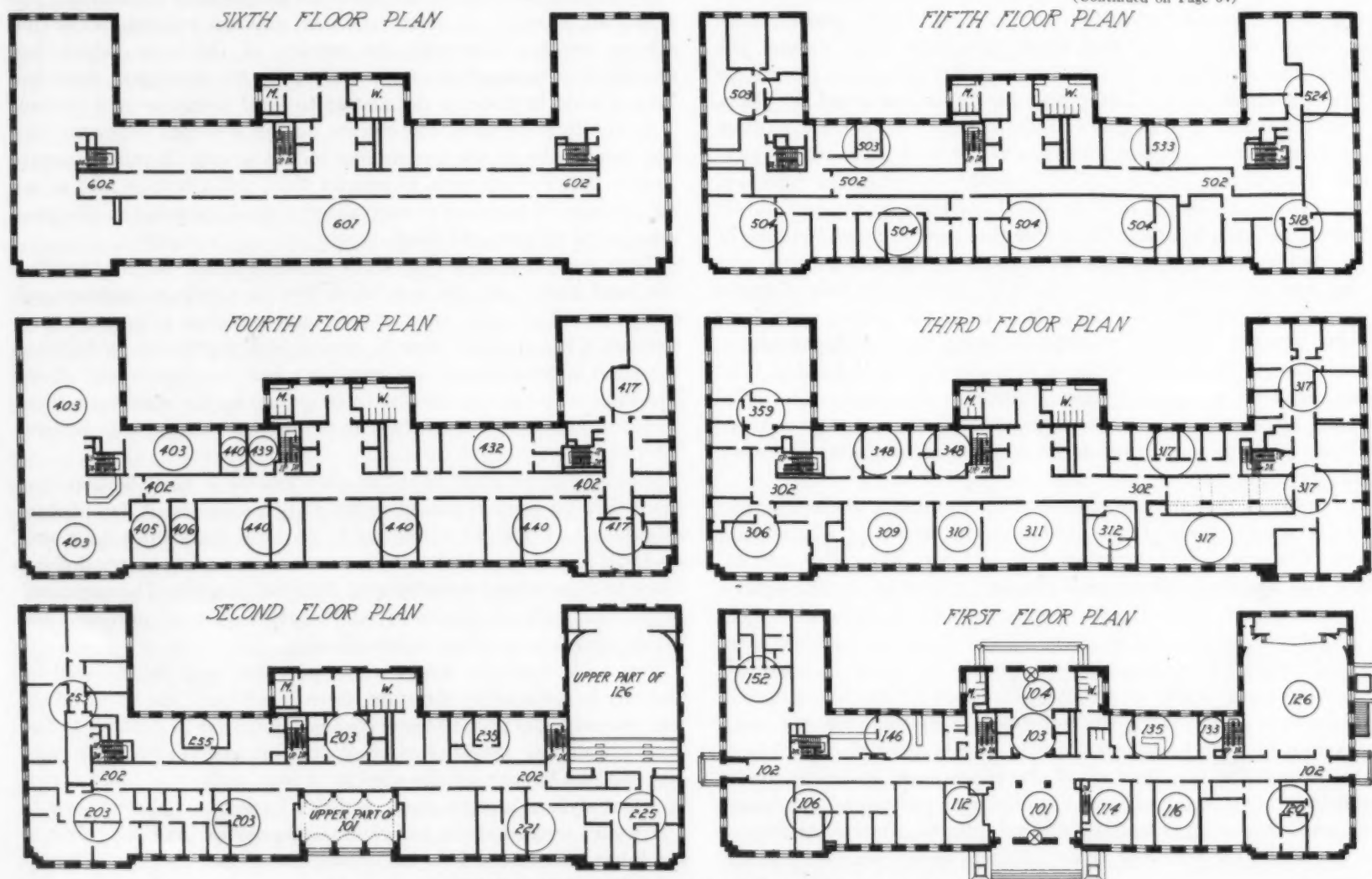
Annette Smith

The Cleveland board of education moved into its new building November 13. Cleveland has a Mall stretching from Superior Avenue to the shores of Lake Erie which, eventually, will be landscaped

and flanked by buildings harmonious in design. The board of education building is a unit in that plan. With its erection there are few buildings remaining to complete The Mall, and with the wrecking of

some old structures and landscaping the parkway the plan, which has been in the minds of civic leaders for 20 years, will be a reality.

The building was designed primarily for utility; (Continued on Page 64)



FLOOR PLANS, CLEVELAND BOARD-OF-EDUCATION BUILDING

601—unassigned, 602—corridor.
502—corridor, 503—architects' department, 504—division of housing, 518—director of schools, 524—bureau of purchases, 533—commissioner of purchases.
402—corridor, 403—accounting department, 405—clerk-treasurer, 406—state auditor, 417—vocational and practical arts department, 432—child accounting division, 439—blue print room, 440—sinking fund commission.

302—corridor, 306—library, 309—staff room, 310—committee room, 311—meeting room of the board of education, 312—division of publications, 317—superintendent of schools, assistant superintendents, and supervisors, 348—bureau of personnel, 359—division of educational research.
202—corridor, 203—division of special classes and psychological and psychiatric clinic, 221—braille and sight-saving classes, 225—English and foreign languages, 235—records and

special services, 255—physical welfare.
101—main lobby, 102—corridor, 103—elevator lobby, 104—rear lobby, 106—bureau of attendance and placement, 146—bureau of placement, 112—telephone exchange, 114—duplicating and mailing department, 116—school gardens, 120—supervisor of music, 133—speech correction and orthopedic division, 135—adult education, 126—auditorium, 152—medical inspection division.



When next year's classes meet . . .
and next . . . and next



ABRAHAM LINCOLN JUNIOR HIGH SCHOOL, ROCKFORD, ILLINOIS
Architects: Peterson & Johnson. Contractors: Holmquist & Peterson

SCHOOL and university buildings must be bright, attractive and inspiring year after year to greet the constant stream of fresh young faces that come to them each fall. It is a definite obligation of those who create and supervise institutions of learning that every element of design and construction offers a stimulating sense of appropriate beauty to the impressionable minds which are in their charge. Yet, it is an equal obligation, because the taxpayer foots the bill, to specify in such construction only those materials which achieve the desired result practically and economically.

That is why the *lasting* brilliant finish of L·O·F Flat Drawn Window Glass has brought this fine product into such universal use for public buildings of every kind. The initial investment is no greater. The *life* of the glass is longer. Its original beauty, sparkle and brilliance will be the same when next year's classes meet . . . and next . . . and next.

Ask your architect about L·O·F "A" Quality Glass when you plan new schools or figure your replacement estimates. Then make sure, for your own protection, that the distinctive L·O·F Label appears on each sheet you use.

LIBBEY · OWENS · FORD QUALITY GLASS



LIBBEY · OWENS · FORD GLASS COMPANY, TOLEDO, OHIO
Manufacturers of Highest Quality Flat Drawn Window Glass, Polished Plate Glass and Safety Glass; also distributors of Figured and Wire Glass manufactured by the Blue Ridge Glass Corporation of Kingsport, Tenn. . . . This label appears on each light of L·O·F "A" Quality Glass. Printed blue for double strength and red for single strength.

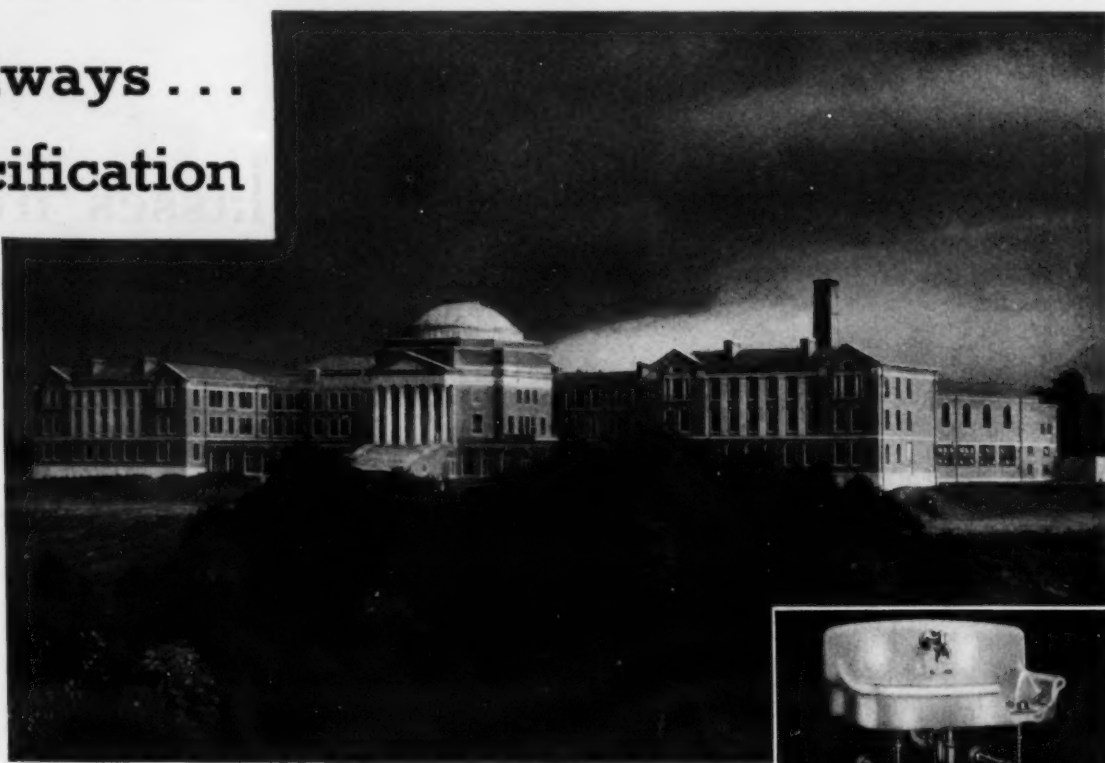
Now... as always... the favorite specification for SCHOOLS



There is of course a reason for the continued preference of school authorities and architects for Halsey Taylor Drinking Fountains. The question of health-safe sanitation is definitely settled once the specifications call for these modern fountains...

Patented features such as two-stream projector (lips need never touch supply) and automatic stream control (water at uniform height regardless of pressure changes) mean freedom from objectionable features of ordinary side-stream types and a guarantee of the utmost in drinking convenience!

THE HALSEY W. TAYLOR CO. • WARREN, OHIO
Largest Manufacturers of Drinking Fountains Exclusively



New Walnut Hills High • Cincinnati, Ohio • Garber & Woodward, Architects

HALSEY TAYLOR DRINKING FOUNTAINS

*With distinctive two-stream
Halsey Taylor projector and
practical automatic stream
control!*



Types used in above building are No. 611, battery type; No. 631, semi-recess; No. 616, pedestal—and No. 603, not illustrated.

(Continued from Page 62)

it is a regular office building with the necessary extras of an educational center.

Walker and Weeks, the Cleveland architects, who designed the building remembered first, that it had to conform to other buildings on The Mall. Therefore, its height and general lines harmonize with those buildings. Next, that it be arranged conveniently for the business of board of education offices. And third, that it have ample provision for the needs of teachers and others in the field.

This third provision is taken care of in the many conference rooms of varying size. The main assembly room, which has a seating capacity for 375 people, has a stage and comfortable auditorium seats but is not suitable for theatricals or other entertainments. Cleveland is well provided with halls for such purposes. This room will house principals' meetings, departmental meetings, and other educational gatherings. Throughout the rest of the building are rooms for small conferences, and for larger groups.

Entering the building on the Sixth Street side, which is the side that does not face The Mall, one sees a two-story lobby, with ceiling supported by bluish-green Cippoline marble pillars resting on a Venoso marble floor. Two murals, depicting branches of education and progress of education, by Cora Holden, Cleveland artist, decorate the lobby.

Taking the elevator to the third floor, one steps directly into the board room, where the board of education holds its biweekly meetings. The room panelled in golden vein formoso marble, is arranged for the convenience of board members, as well as for the public who attend those sessions. Stationary seats are provided for persons wishing to hear board business.

Progressing from the board room, one comes to the meeting place of the superintendent's staff. Movable chairs and a mahogany "pulpit" form the equipment of this room for staff meetings.

The library, which is a branch of the Cleveland public library, specializing on pedagogical literature for the school system, is one of the most attractive rooms in the building. The decorations and furniture are centered about a fireplace made from the



LIBRARY, BOARD-OF-EDUCATION BUILDING, CLEVELAND, OHIO
Walker and Weeks, Architects, Cleveland, Ohio

bricks of the old Rockwell School, the building formerly occupied by the board of education which was torn down to make room for the new building. Davenport before this fireplace provide a resting place for "browsers." In fact the whole room invites one to read its wares.

The superintendent of schools and his four assistants occupy a suite of rooms adjoining each other to expedite conferences between these officials. These are furnished in mahogany to match the woodwork, with inlaid linoleum for floor covering. The offices of the elementary supervisors are connected with this suite, making the supervisors easily accessible to the superintendent in charge of

elementary schools. The division of publications, which is the "hang-out" of the newspaper men of the city is centrally located between the superintendent's suite and the board room.

The bureau of educational research has a large suite of rooms, equipped with statistical machines and other devices necessary to the work. The bureau of attendance and placement, which ministers to high-school students applying for working permits, has a special entrance on the St. Clair side of the building so that applicants need not go through the main lobby. Several rooms, adequately equipped, are set aside for the examining physicians and oculist of this division.

(Concluded on Page 66)



The schoolhouse as a moulder of minds . . .

A school's obligation to its pupils embraces more than the three R's. It must also provide an environment where study becomes synonymous with beauty and happiness.

The kindergarten illustrated above (Whittier Elementary School, Oak Park, Illinois; Childs & Smith, Architects) is an excellent example of how the usual monotonous appearance may be avoided. In the background is a goldfish and wading pool, fringed with shrubbery. The walls are gracefully arched and frame huge windows. The resilient floor of Sealex Linoleum is in a distinctive adaptation of Algerian marble colorings—rust, gray, black, cream and gold—ranging from pure, intense tones to blended, lighter shades.

Of course, all school rooms will not be as decorative as this kindergarten. But they can be made more cheerful with Sealex Floors.

Installing Sealex Floors throughout your building will not entail any considerable expense. They are moderately priced and the saving on refinishing bills over a period of time helps them to pay for themselves. Sealex Floors never have to be scraped, varnished or painted. An occasional light waxing keeps them like new.

Sealex materials installed by authorized contractors of Bonded Floors are backed by Guaranty Bonds. Write our School Floors Department for further information.

CONGOLEUM-NAIRN INC., KEARNY, N. J.

SEALEX
LINOLEUM FLOORS

NOT JUST QUALITY



BUT SUPREME QUALITY

FOR FIFTY YEARS THE CHOICE OF CAREFUL BUYERS

For more than half a century, the Billings-Chapin Co. has been producing paints and varnishes distinguished for their supreme quality. This is best shown by the fact that innumerable users of BILLINGS-CHAPIN products . . . schools, both public and private, as well as hospitals, government departments and various buildings in general . . . have been specifying "BILLINGS-CHAPIN" year after year.

With a foundation of only the finest grades of raw materials, BILLINGS-CHAPIN paints and varnishes are so manufactured that they have larger covering capacity, greater ease of application, longer durability and cleaner, clearer shades. Perfect satisfaction to the user is the natural result of the more beautiful finish, the longer service received, and the genuine economy in dollars and cents.

The BILLINGS  CHAPIN CO.

BOSTON — CLEVELAND — NEW YORK — EST. 1879

U. S. DECK PAINT

A "universal" paint particularly suitable for school room walls. Produces a hard, non-porous finish which is absolutely washable and sanitary and which has unusual resistance to hard wear. The outstanding marine paint for forty years, its durability is sea-tried.

RUSTNAUGHT

A metal paint which absolutely inhibits rust either through dampness or electrolytic action. Its durability has been proof against all sorts of severe conditions. Your problem of metal protection will disappear when Rust-naught is used.

ARTONE

An interior flat finish giving a soft clear finish which is easy on the eyes and particularly formulated to reduce eyestrain. It has remarkable durability and resistance to injury. The finish may be cleaned with a damp cloth as often as necessary without injury.

U. S. MARINE VARNISHES

The latest achievement of our laboratories. Finishes which set a new standard of durability and resistance to acids, alkalis, water and alcohol. Absolutely different from the old style varnishes, being manufactured under entirely new formulas.

(Concluded from Page 64)

The educational department occupies the first, second, third, and part of the fourth floors, the offices of the clerk-treasurer are on the fourth floor, and those of the director of schools are on the fifth floor. The sixth floor, planned for future expansion, is partly occupied by the classroom division of the Cleveland Public Library. The parent-teacher association of Greater Cleveland will have an office and meeting place in the new building.

An underground garage for employees' and board-owned automobiles is a unique feature. With parking space at a premium when The Mall is finally completed, arrangements have been made to take care of the parking problem for persons using automobiles on board business. The garage has space for 120 cars and extends to the Sixth Street line, making it necessary to elevate the Sixth Street lawn in a terrace effect.

Facilities for educational exhibits promise to be of considerable educational value. It is planned to use these display cases and bulletin boards as stimuli to work in the Cleveland schools. When a supervisor of English, for example, sees a good piece of work in one school he brings the tangible part down to headquarters and arranges the ex-

hibit. Then he invites teachers in the particular subject to see the display. Exhibits will be far more than a display of pupils' work—they will be supervisory devices, in themselves.

The psychological clinic has taken a leaf from criminal procedure. The examiner's office has a screen arrangement, so lighted that the parent can sit in one room, look through the screen at his child being examined, and be invisible to the patient. In these days of intelligence tests, individual psychological examinations, and modern pedagogical devices, parents are frequently fearful of the effects of such "magic" on their children. They bring their child down for an examination and fearfully turn him over to the examiner, the mother being unable to go in with him to protect him from this unknown danger.

The total cost of the site, the building, and landscaping was \$2,439,000. The building alone cost \$1,085,700, landscaping the grounds, \$114,603, and the balance went into equipment and furnishings.

WASHINGTON CORRESPONDENCE

A. C. Monahan, Formerly U. S. Office of Education

New Federal Department of Education Bill

Congressman Daniel A. Reed, of Buffalo, introduced in Congress early in its present session during the past

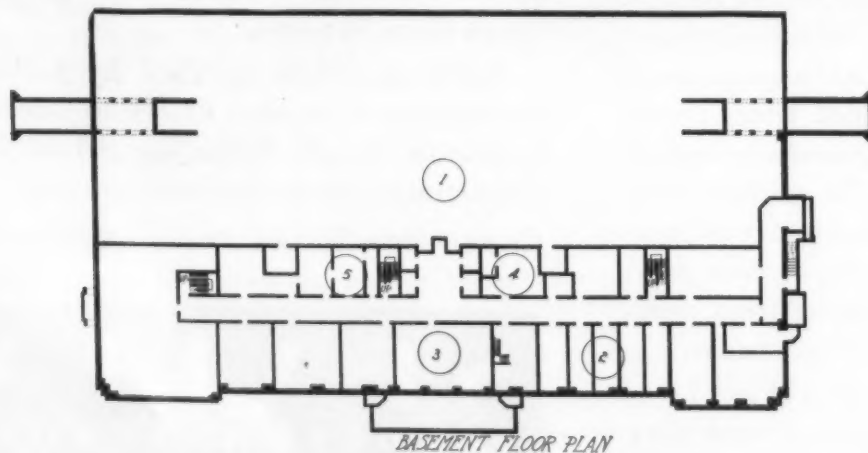
month a new bill proposing a Federal Department of Education, following the proposals of the Report of the National Advisory Committee on Education. This report was reviewed in this JOURNAL last month. The measure which would create an executive department to be called the Department of Education, is headed by a secretary who would have a place in the President's cabinet. There would be three assistant secretaries all appointed by the President. The Department would have no administrative functions, being purely a research, fact-finding, and informational organization. The duties as described would be:

" . . . to collect such statistics and facts and to make such investigations as shall show the condition and progress of education and of other community activities that vitally affect human development and to refuse such information respecting schools and other social institutions as shall aid the American people in the establishment and maintenance of efficient school systems and as shall otherwise promote education and the educational aspects of community activities without impairing local autonomy or the responsibility of the citizens of the respective states, territories, and outlying possessions to manage their own institutions whether conducted as public or private enterprises."

The bill would abolish the present U. S. Office of Education and the Federal Board for Vocational Education, transferring the duties of these two bureaus to the new department. It would provide money for the work of the new Department, but would not carry any appropriation to be paid to the states to assist them in their educational work. The present funds paid the states for the state colleges of agriculture and mechanic arts, and for vocational schools would be continued, but the authority now in the Federal Board to require states to follow plans approved by it in their vocational-education work, is not transferred to the new department. States would be free to follow their own ideas in vocational education.

Insulation of School Buildings

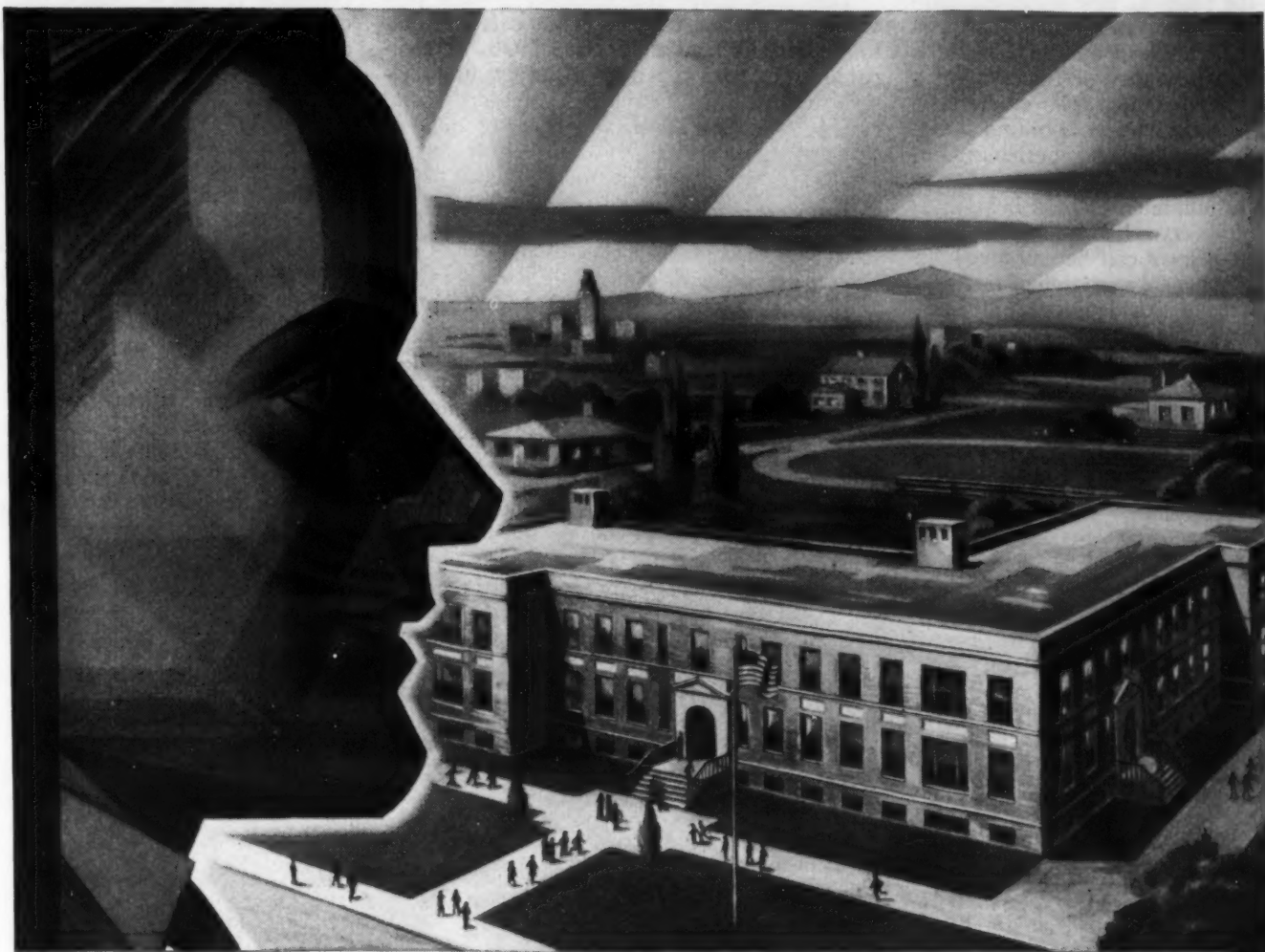
School authorities will find a recent publication of the U. S. Department of Commerce of value in the problem of construction of buildings economical from the standpoint of saving heat. It is entitled *House Insulation: Its Economics and Application*. It is the work of the National Committee on Wood Utilization and shows the results of intensive studies made by the U. S. Bureau of Standards and others. The American Institute of Architects cooperated. All types of insulating materials, woods, wood fiber, special composition boards, etc., were included in the study, as well as methods of construction. It shows that savings in fuel bills up to 30 per cent may be had by using proper insulating and construction.



BOARD-OF-EDUCATION BUILDING, CLEVELAND, OHIO

Walker and Weeks, Architects, Cleveland, Ohio

1—underground garage. 2—storage rooms. 3—machinery. 4—women janitors. 5—men janitors.



The School — it had its slipping hazards. But now there's safety in Alundum Stair Tiles and Treads

EDUCATION « » « »

Norton also serving America's greatest industry — the fundamental industry — the school. "Norton Floors" is the trade name for a line of non-slip products — Alundum Stair and Floor Tiles, Alundum Ceramic Mosaics, Alundum Aggregates for terrazzo and cement floors.

All are permanently non-slip. Wear-resisting.

School children must be safeguarded against accident — on the stairs, in the lobbies, the lavatories, the shower room. Even the swimming pool needs its non-slip edges and surrounding floors. Norton Company, Worcester, Mass.

NORTON

Grinding Wheels Abrasives for Polishing
 Abrasive Aggregate Floor and Stair Tile . . .
 Grinding and Lapping Machines Refractories
 Porous Plates Pulpstones . . .

The High-School Cafeteria

Rhue E. Green, Ohio State University

A study of the plans of new buildings indicates the growing importance of the cafeteria as a unit of the high-school building. There is no question of the necessity of this part of a modern high-school building. The cafeteria is organized to permit the student to obtain warm, wholesome food, served in an appetizing manner, and at a reasonable cost. The cafeteria system requires a minimum of paid help, inasmuch as each pupil serves himself, and in some instances student helpers can be employed. In order to secure economical operation of the cafeteria, it is necessary to provide the best arrangement of the rooms to be included, as well as the installation of equipment to meet the needs. In addition to the practice of economy, the construction must provide for pleasant surroundings.

The author has made an investigation of 139 of the largest high schools of twenty North Central States to determine the present status of the cafeteria. The larger schools were selected with the hope that they would better illustrate the desirable practices of cafeterias. The report includes a discussion of the (1) rooms included, (2) arrangement of rooms, (3) equipment provided, and (4) policies of administration.

The proportion of high-school buildings providing cafeteria service increases with the enrollment of the school, as is pointed out in Table I. Of the group of 139 high schools, having enrollments ranging from 780 to 4,998 students, 118, or 84 per cent, provide cafeteria units. The percentage increases consistently with enrollment, since only 67 per cent of the group of smallest schools, and 82 per cent of the schools enrolling from 1,001 to 1,500 students have cafeterias. Every school enrolling more than 2,000 students operates a cafeteria.

Uses of the Cafeteria

Some schools establish certain policies relative to the use of school buildings for community activities. Seventy-two per cent of the schools report that their cafeterias are never used for other than school purposes. It is noted, however, that most of those used for community purposes are in the smaller schools. In larger communities, there may not be a great need for using the school cafeteria for nonschool activities. Every school uses its cafeteria for school banquets, suppers, and parties.

The use of the cafeteria as a study hall has become quite common, probably as a measure of economy. Folding doors are sometimes provided to separate the serving counter from the dining hall with its tables. Partitions are provided in some cases. Seventy-eight per cent of these schools make use of the dining room for study-hall purposes.

Rooms Included

Seven different types of rooms are used by some of the group of schools included in this

TABLE I. Number of High Schools Classified as to Enrollment Having Cafeteria

Item	Number According to Enrollment							Total Number
	750 -1,000	1,001 -1,500	1,501 -2,000	2,001 -2,500	2,501 -3,000	Over -3,000		
Having cafeteria	21	38	25	13	10	11		118
No cafeteria	10	8	3	0	0	0		21
Total number schools	31	46	28	13	10	11		139

report. The per cent of the schools providing each type of rooms is shown in Table II, with the percentages distributed according to enrollments of the schools. The table shows that every school having a cafeteria provides a dining room and a kitchen. Relatively small percentages of the smaller schools provide a faculty dining room, while 92 per cent of schools enrolling more than 3,000 have that room.

The table shows the tendency toward providing the various features of the cafeteria unit in buildings constructed since 1920, as compared with those constructed during, or previous, to that time. In the case of every room, except the dining room and kitchen, there is a considerable tendency toward providing a greater percentage of the rooms in the newer buildings. This fact is particularly evident in the increase of the faculty dining room, the storage room, and the locker room.

Figure 1 suggests a desirable floor arrangement of the rooms to be included in the high-school-cafeteria unit. This plan is suitable for a high school of 1,000 to 1,500 students. The plan does not show folding doors, nor a partition, for separating the dining hall from the serving counter. Either of these may be installed without difficulty.

Location

There are certain advantages of accessibility when the cafeteria is located on the first floor. It permits ready outside entrance and delivery of supplies. This may partly account for the fact that 72 per cent of the cafeterias are located on the basement or first floor. The newer buildings

TABLE II. Per Cent of Groups of High Schools Having Cafeterias which Provide the Indicated Rooms for Cafeteria Service (Based on 118 Schools)

Type of Room	Per Cent According to Enrollment						Number According to Date of Construction	
	750 -1,000	1,001 -1,500	1,501 -2,000	2,001 -2,500	2,501 -3,000	Over -3,000	1920 or Before	Since 1920
Dining room	100	100	100	100	100	100	100	100
Kitchen	100	100	100	100	100	100	100	100
Storage room	72	75	81	85	93	91	78	91
Faculty dining room ..	12	6	13	28	65	92	48	62
Locker rooms	7	3	8	21	32	41	12	31
Dishwashing pantry ..	5	5	4	17	18	23	8	12
Refrigeration room ..	5	5	4	12	22	19	7	9

favor the upper floor for the cafeteria unit, since good ventilation and light are more easily provided. This location is reported in 18 per cent of the schools. Seventy-six per cent of the schools report the cafeteria located near the household arts department.

The Dining Room

The dining room is, of course, essential for the cafeteria. It should be an attractive room, tastefully decorated. The general atmosphere of the room is reflected in the conduct of the pupils.

Number of Pupils Accommodated

Ford¹ recommends that seating space be provided for approximately one third of the total number of pupils to be accommodated. An economy is thereby effected by serving the student body in three groups. He recommends from 8 to 9 sq. ft. per seating in the cafeteria dining room. Eighty-eight per cent of the cafeterias meet this standard. The median per-pupil floor space provided is 12 square ft.

It seems that these schools are generous, not only in the floor space allowed, but in the proportion of the total enrollment to be accommo-

provided. A cement floor is reported in 46 per cent of the cases, hardwood floor in 22 per cent, and the remainder are distributed among tile, terrazzo, and composition.

Lighting

Proper lighting, both natural and artificial, is necessary in order to make the dining hall attractive and the noon lunch pleasant. Adequate lighting is important in the kitchen in order to facilitate careful preparation of the food. Electric outlets must be generously distributed throughout the cafeteria. The number of outlets found in the 118 dining halls range from 2 to 48, with a median of 16. The average number for the group is 12.

It is apparent that these high-school buildings furnish a slightly lesser proportion of glass area for the cafeteria than for the classroom. The median for cafeterias is a ratio of 1 to 5, but the interquartile range is from 1 to 10 up to 1 to 4.

Entrances

Doors should be located so that there may be rapid exit or entrance of students without congestion. No less than two entrances can pro-

vide this. Sixty-one per cent of the dining rooms have two entrances; the range is from 1 to 6.

Tables

There is a wide variation in the sizes and types of tables used in the dining hall; 14 different sizes are reported, ranging from 3 to 14 ft. in length. The typical table is 6 or 8 ft. long. The table tops are of more importance than is ordinarily accorded this item. Eighty-two per cent of the table tops are of wood, with the remaining 18 per cent divided among porcelain, composition, glass, or linoleum. Eighty-eight per cent have chairs, 9 per cent stools, and 3 per cent use benches for seating the patrons.

(To be Concluded in February)

WAYS AND MEANS OF INCREASING SCHOOL FACILITIES IN TIMES OF BUSINESS DEPRESSION

(Concluded from Page 31)

almost any time because they are not like individuals, who possibly have neither the money, the credit, nor the pressing need for a building. On the other hand, public bodies always have the credit even if they haven't the money, because they can issue bonds and obtain the necessary funds. Public building can usually be postponed until a time of depression. In the meantime, a substantial amount of building work has accumulated which, when released, has a marked stabilizing effect on business conditions.

Heretofore haphazard methods have been followed so that, when private enterprise was busy, public bodies also started to build, which made it more expensive for all parties concerned. If, by any possible means, a new school can be erected during these times, it will be an act of patriotism in that it will not only provide increased school facilities, but also work for the unemployed, thereby helping the country in overcoming a business depression which has not been equalled for many generations.

¹Ford, W. S., *Administrative Problems of the High School Cafeteria*, 1926, Teachers College, Columbia University, p. 25.

Coaches!

TO PLAY BETTER BASKETBALL

*treat your Gym
floor with*

SEAL-O-SAN

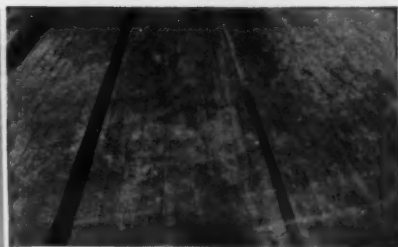
**A PERFECT NON-SLIPPERY
SURFACE!**

SEAL-O-SAN produces a perfect, non-slippery playing surface for your gymnasium floor. At the same time it seals, preserves and beautifies the floor and makes maintenance much less costly. Notre Dame University, Indiana University, Purdue University, University of Michigan, Butler University and over one thousand other colleges and high schools are using SEAL-O-SAN on their gymnasium floors and endorse it enthusiastically.

Be careful of the way you treat your floors, because compounds containing mineral oils or paraffin make floors sticky or slippery or black. SEAL-O-SAN is a truly scientific floor treatment, developed through several years of careful laboratory work to produce a perfect playing surface.

SEAL-O-SAN can be applied to old or new floors and is very easy to apply as well as economical. South Side High School of Fort Wayne, Indiana, had been spending over \$400 to recondition their floors and this year got a better job at a cost of only \$34.00 with SEAL-O-SAN. U. S. High School, Longmont, Colorado, writes that SEAL-O-SAN is standing hard usage beautifully, protecting the floors and saving at least 25% in labor and upkeep.

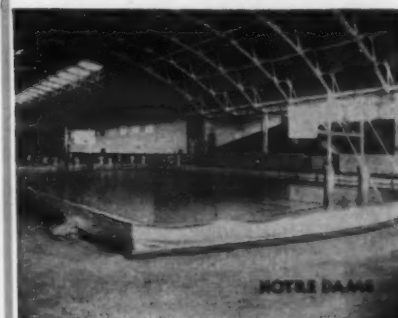
Write us today for more information. We will gladly quote on the cost of treating your floors and give you names of other schools in your vicinity where you can inspect a SEAL-O-SAN treated floor. Use the coupon.



BEFORE USING SEAL-O-SAN!



AFTER USING SEAL-O-SAN!



THE HUNTINGTON LABORATORIES, Incorporated • HUNTINGTON, INDIANA

Canadian Plant, 72 to 76 Duchess St., Toronto, Ont.

Rocky Mountain Plant, 1429 18th St., Denver, Colo.

SEAL-O-SAN

PRODUCES THE PERFECT BASKETBALL FLOOR

MAIL THIS COUPON!

Huntington Laboratories, Inc.,
Dept. 4, Huntington, Indiana.

We might consider treating our gymnasium floor with Seal-O-San soon. Rush information immediately.

NAME _____

ADDRESS _____

CITY _____

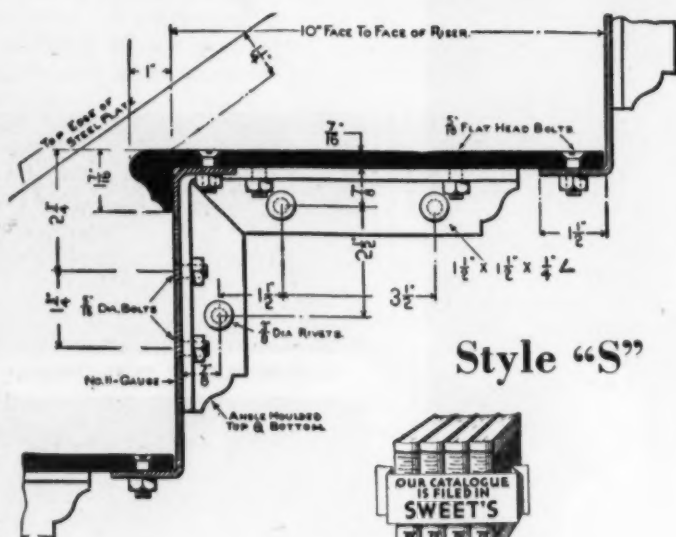
STATE _____

When planning that new school building or rehabilitating the old one insist on

ABRASIVE-METAL
ALUMALUN FERALUN BRONZALUN
Anti-Slip Treads
NICALUN

FERALUN
Anti-Slip Treads

ABRASIVE-METAL
ALUMALUN FERALUN BRONZALUN
Anti-Slip Treads
NICALUN



1932-A1057-1066

----- they renew old stairs and
insure new stairs against wear -----

In planning new schools or the rehabilitation of old ones, considerable thought should be given to stairs. Stairways are easily the most used part of a building and if they wear and become smooth, the children are in constant danger of serious injury from falls caused by slipping. Feralun Anti-Slip Treads will outlast the building and provide sure footing at all times. Be sure to include Feralun in your specifications.

Complete installation data on request.

American Abrasive Metals Co.

Representatives in all principal cities

50 Church Street

New York, N. Y.

THE NEW EDUCATION BUILDING FOR PENNSYLVANIA

The new state education building at Harrisburg, Pa., which is significant in its dignity and permanence, reflects those qualities of soul and mind which have earned for the Commonwealth of Pennsylvania a "keystone" position in the life of the nation. It has been designed to house with proper convenience the various activities of the State Education Department, and to express its purpose as an instrument of education. It is the second separate monumental building devoted to the administration of the education system of a great state.

On the exterior, the simple lines and the lack of architectural ornament lend dignity to the building. Upon the frieze are engraved the names of 35 educators, philanthropists, and statesmen who have rendered outstanding service to education in the state. The bronze gates at the main entrances symbolize the different kinds of activities of modern man, all being represented by symbolic figures or objects appropriate to the occupation.

The construction work on the building was begun in July, 1929, the "forum" was completed in September, 1931, and the entire building was dedicated in November, 1931. The building is 472 ft. long, with a depth of 200 ft., and a perimeter of a fourth of a mile. It contains more than eight acres of floor space, providing space for 250 rooms and 70 offices on each of the three upper floors. The floor of the forum contains 2,000 sq. yd.

The Main Lobby

Entering the main lobby, one is confronted by walls of golden-vein Famosa marble, and an information counter of light forest-green marble. Above an expansive ceiling, one is treated to a rich symbolism of the interior. Thirteen beams span the room, which are alternately pictorial and decorative. These comprise sports and diversions, arts, sciences, religion and philosophy, commerce, agriculture, and transportation, and industry with special emphasis on those of Pennsylvania.

The Forum

The forum, which is semicircular in form with a colonnaded promenade in the rear, is unique in arrangement. It provides for free discussion, not

only from the stage, but also from any seat within the amphitheater, with the speaker in view from the stage and from all other seats. Below, as a base, are the banks of seats; at the side is the circular wall of the promenade bearing geographical representations in colors, and above is the spangled blue panoply of the heavens. On the circular walls of the promenade are map paintings and sets of chronological tables covering the history of the world up to the present time. Beginning at the west end of the art with ancient civilizations and at the east end with those of the orient, they portray, step by step, the gradual development of civilization, meeting at the center of the arc in the rear, in the fourteenth year of the twentieth century.

Beginning with the oriental culture of the early Chinese, it passes through the various civilizations, revealing a vast panorama of important epochs and events of historic man. In the painting of the ceiling of the forum, the artists have made an effort

to depict something of the grandeur of the heavens. Around the frieze the names of the constellations are placed, as are also the major stars. At the center of the firmament is an elliptical design, depicting the three theories of the universe, the Ptolemaic of the second century, the Copernician, and the modern Keplerian theory of elliptical orbits. The forum has a seating capacity of 1,868, including orchestra, lower-circle, and upper-circle seats. The platform stage is large enough to accommodate a full orchestra, and provision has been made for a pipe organ. The rear of the stage provides space for a screen for motion-picture projection, while at the rear of the forum, provision has been made for an operator's booth. Back of the stage are accommodations and equipment for all possible activities of the forum.

The building was erected from plans prepared by architects William Gehron and Sidney F. Ross, and cost approximately \$5,500,000.



STATE EDUCATION BUILDING, HARRISBURG, PENNSYLVANIA.

★with all your Planning do not forget Communication!



IT is easy to overlook important matters while watching details—but do not neglect to provide in your plans for the school's own private,

interior system of communication!

No modern school building can be called truly convenient without the inviting simplicity of Strowger P-A-X. It links classrooms more closely, concentrates supervision in the principal's office. It saves time and, more important, it saves the energy of the entire teaching staff.

For consider: with Strowger P-A-X, the principal can call a teacher in a distant classroom, speak with the janitor down in the boiler room, consult an assistant down in the study hall—all within the space of seconds! Classes are not interrupted. Long conferences are eliminated.

Strowger Monophones are very easy to use. Just dial—and talk. All calls are handled *automatically* by a switchboard so simple in construction that your own school electrician can service it. As many telephones as you need are provided, each instrument being connected to the main switchboard by a single pair of wires.

Your present school building may also be supplied with Strowger P-A-X communication at surprisingly low cost. No remodeling or expensive changes are necessary. Write today for our portfolio specially prepared for schools and architects. Suggest Strowger P-A-X to your architect when he plans your building! Write to: American Automatic Electric Sales Company, 1033 W. Van Buren Street, Chicago, Illinois.



★ Strowger P-A-X Monophones come in attractive colors to harmonize with the classroom interior. Instruments are built by the originator of the dial telephone—are identical to those in regular city service.

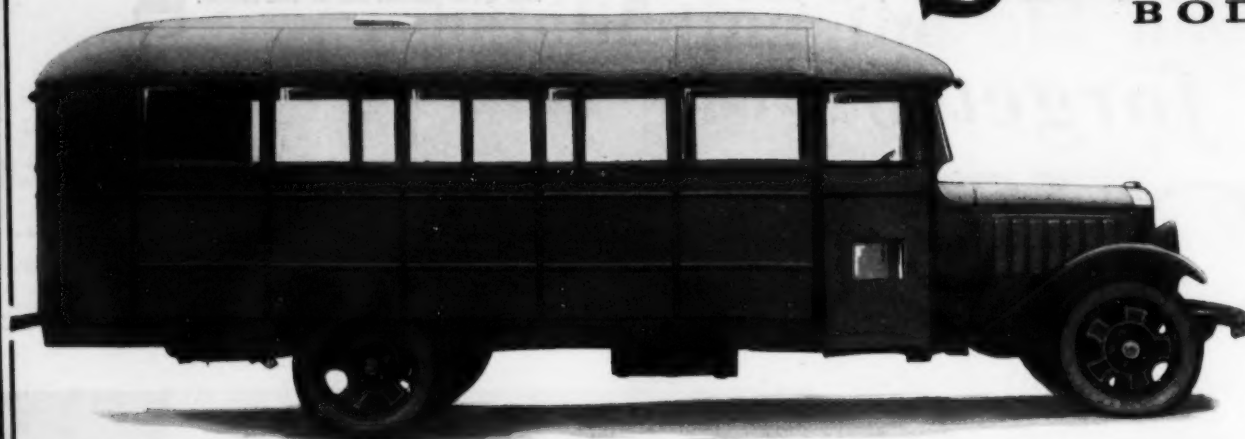


“THE VOICE

OF BUSINESS”

Automatic Electric Company

Sales and Service Offices: NEW YORK : PHILADELPHIA : BOSTON : PITTSBURGH : WASHINGTON, D. C.
CLEVELAND : CINCINNATI : ATLANTA : DETROIT : ST. PAUL : KANSAS CITY, MO. : LOS ANGELES



ALL-STEEL SCHOOL BUS SUPERIOR BODIES

NO OTHER SCHOOL BUS OFFERS ALL ... THESE SAFETY FEATURES

With the All-Steel School Bus Superior Body you provide the very maximum of safety in transportation of school children. And in addition, you get the practically unlimited durability that enables you to settle for all time with one single investment your transportation problem. No other school bus in the market offers all these features of safety and durability:

- | | |
|----------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 . . One hundred per cent all-steel and fire-proof construction in every detail. | 9 . . More seating capacity for any given length. |
| 2 . . All glass shatter-proof. | 10 . . Economy and security of mounting on any chassis. |
| 3 . . Continuous steel floor covered with battle-ship linoleum. | 11 . . Quietness—all rumble eliminated. |
| 4 . . Diamondette tread on entrance steps. | 12 . . Long life—the All-Steel Superior will far outlast any other school bus made. |
| 5 . . Outside gas tank. | 13 . . Low price. |
| 6 . . Absolute elimination of exhaust fume hazard. | 14 . . Tested and proved. Scores of All-Steel Superior Bodies in use have established the fact of Superior performance. One Superior bus has already been operated 60,000 miles with no sign of wear—10 years of usual mileage. |
| 7 . . Ample ventilation. | |
| 8 . . Full, unobstructed vision from all parts of interior, including safety window in lower panel of entrance door. | |

The All-Steel Superior specialized school bus body is available from any local automobile dealer mounted on any 1½ ton truck chassis. It costs no more than far inferior bodies. Our engineering staff will gladly aid you without charge in the analysis of your transportation problem and in bus routing.

Write for complete data.

SUPERIOR BODY COMPANY
LIMA, OHIO

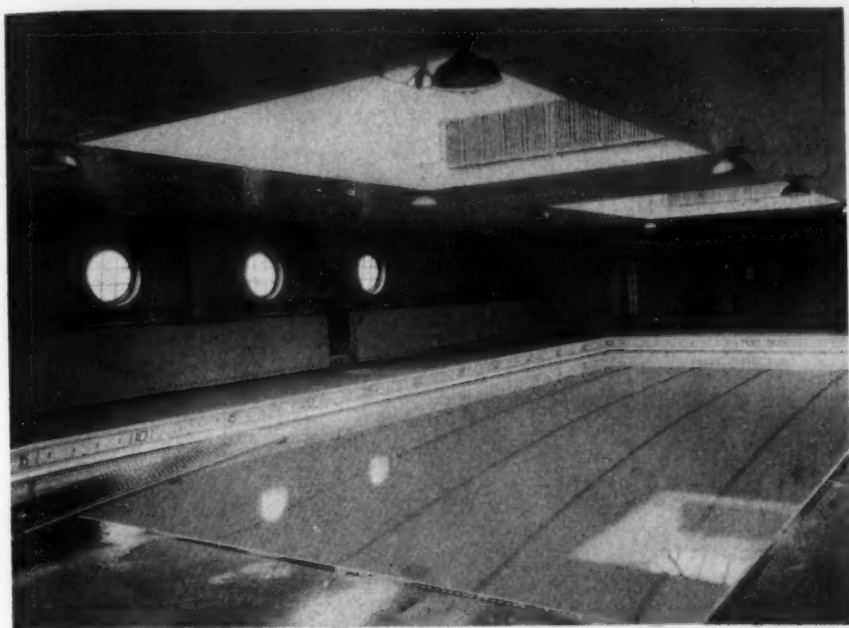


Full, unobstructed vision.

Four sizes and various seating arrangements optional.



There is no slipping on the entrance steps of a Superior School Bus. Diamondette treads afford absolute safety and limitless wear. Glass in lower panel of entrance door gives driver full vision of outside entrance area. Door control levers chrome plated.



A W & T Solution Feed Chlorinator sterilizes the pool water of the Cleveland Heights High School, Cleveland, Ohio.

"Swim in



Drinking Water"

CLEAN BECAUSE IT'S CHLORINATED

Pure water for the morning swimming classes. Pure water for the larger "after school" crowd. At all times . . . under all swimming loads . . . chlorination is positive protection.

A residual sterilizing action continuously applied by reliable W&T chlorinators assures both school and health authorities that students are fully protected. Over 300 American schools and universities easily meet rigid health requirements through the use of W&T apparatus . . . apparatus whose fitness for the work is proven by the records of over 15,000 W&T chlorinators actively engaged in the allied sanitary services of drinking water sterilization and sewage disinfection.

When writing for Technical Publication 41, ask also for a copy of "High School and College Swimming Pools."

WALLACE & TIERNAN CO., INC.

Manufacturers of Chlorine and Ammonia Control Apparatus

NEWARK

NEW JERSEY

Branches in Principal Cities

A PRODUCT OF
WALLACE & TIERNAN

School Finance and Taxation

INTEREST ON PUBLIC-SCHOOL DEBT ENORMOUS

Indebtedness for public schools in the United States has mounted to over \$2,193,000,000, according to Mr. E. M. Foster, chief of the statistical division of the U. S. Office of Education. Approximately \$100,000,000 is being paid in interest on the debt.

The debt which has accumulated for this one purpose is tremendous, but has been due to a rapidly expanding system necessary to meet pressing needs. However, the strain is relaxing, and expansion will be normal in the future, so that state and local governments may begin to liquidate their obligations.

When the expenditures and debts incurred for the promotion of public education in the nation as a whole are surveyed, the totals appear astonishing. More money is spent by the 48 states on education than on any other single item. Approximately 48 per cent of all state money distributed for various purposes goes to schools.

Of the total bond issues during the period from 1925 to 1929, those for schools and school buildings ranked third, with \$1,312,000. Of the gross borrowings, \$787,000,000 was by school districts, and \$746,000,000 by the states.

The report also shows that in addition to the indebtedness for public schools, their annual costs are about \$2,200,000. The states apart from other units, spend nearly 40 per cent of their funds on education annually.

SCHOOL-BOND ISSUES AND SPECIAL LEVIES IN OHIO COUNTY SCHOOL DISTRICTS

A study of the disposition of school-bond issues and special levies submitted in Ohio county school districts has been made recently by Dr. T. C. Holy

and Mr. Wm. E. Arnold, of the bureau of research of the Ohio State University. The study covered 88 counties in the state, all of which presented reports.

The study showed that 27 counties submitted bond issues during 1931. The total number of bond issues submitted was 37, of which 20 were carried, and 17 failed of approval. The total amount of the bond issues was \$2,047,500, and of this amount \$1,178,000 was carried at the elections. The average per cent of the vote favoring issues which carried was 68.5, and the per cent of the total amount of issues submitted which carried was 57.5. The range of the per cent for bond issues which carried was 55.2-93.

In the study of special levies, it was found that a total of 66 counties had submitted special levies, with a total of 301 levies submitted. Of the total, 209 levies were carried, and 83 levies had failed. The per cent of the total number of levies carried was 70.3, and the average per cent favoring levies which carried was 65.3. The range of percentages for levies which carried was 51-100, and the range for levies which failed was 14-49.

FINANCE

♦ The secretary of the board of education of Philadelphia, Pa., has issued a statement of the annual budget for the school year 1932. The budget, as prepared, calls for a total appropriation of \$35,929,561 for school purposes for the year 1932, as compared with \$34,448,872, for the year 1931. The two large amounts in the budget are \$5,679,118 for debt service, and \$2,190,500 for operation of the school plant. Other items are \$1,747,110 for salaries of employees, and \$1,642,872 for new sites and buildings. The total for instruction purposes is \$21,422,967.

♦ Berkeley, Calif. The school board has adopted a budget amounting to \$2,275,519 for the school year 1931-32, which is a reduction of \$45,501 from last year's total budget, and a decrease of \$69,464 from the tentative budget. The budget marks a definite change in the financial policy of the school board in that the reserve fund carried in the budget has been materially reduced, and the local school administration has entered upon a program of re-

habilitation of the present school program. Under the new policy, there has been allotted \$145,157 for the maintenance of the school plant, of which \$60,000 will be used for repairs to school buildings. The largest item in the budget is \$1,513,397 for teachers' salaries.

♦ Conneaut, Ohio. Faced with the problem of reducing their joint budgets of \$336,000 in order to keep within the 15-mill limit, the city government and the city schools have suffered reductions of \$46,000 and \$23,000, respectively. The school term has been shortened by one and one-half months, and the teachers' salaries will eventually be reduced. The school board had prepared a budget of \$235,000, but the city allowed only \$101,000.

♦ The school superintendents of western Ohio, at their recent meeting in Dayton, adopted resolutions favoring the curtailment of school-operating expenditures and the placing of a tax on luxuries and incomes for the support of the schools. The superintendents discussed ways and means of continuing the operation of schools in districts where the available funds are lacking.

♦ Oak Park, Ill. The school authorities have begun a drive to sell \$100,000 in tax-anticipation warrants in order to keep the schools open. The board of education had voted to close the elementary schools when no more funds were available to pay the teachers' salaries. The tax warrants draw 6 per cent interest and are payable when the 1930 taxes are collected.

♦ Urbana, Ohio. The school board has ordered that the contracts for teachers be extended to include the second semester of the school year. The extension was made with the assurance that funds for the operation of the schools would be available for a continuance of the school term.

♦ Memphis, Tenn. Faced with an economic emergency in its finances, the school board has discontinued the night schools and inaugurated other economy measures. The action was taken after the city government had refused to assist the board in solving its financial problem. The board estimates the deficit at \$400,000.

PARTIAL LIST OF STEELTEX INSTALLATIONS IN SCHOOLS . .

SCHOOLS	ARCHITECTS
Gadsden High School, Gadsden, Ala.	P. W. Hoffert
School, Anniston, Ala.	L. H. McKibben
State Teachers College, Flagstaff, Ariz.	Finkhugh & Byron
Urbana School, El Dorado, Ark.	Hunter & Boyd
St. High School, Junction City, Ark.	J. Odell Baker
Kanawa School, Kanawa, Ark.	Hunter & Boyd
Jr. High School, Mandeville, Ark.	J. Odell Baker
Standard School, Myrtle Grove, Ark.	Hunter & Boyd
Grade School, Searcy, Ark.	J. Odell Baker
Scott School, Scott, Ark.	Wintersberg & DeLoay
Strong School, Strong, Ark.	Hunter & Boyd
High School Addition, Texarkana, Ark.	Wit, Siskert & Halary
Negro Grade School, Texarkana, Ark.	Wit, Siskert & Halary
E. Main School, Union City, Ark.	Hunter & Boyd
Union School, Union County, Ark.	J. Odell Baker
High School, Van Buren, Ark.	Baughman & Wheeler
W. Helena School, W. Helena, Ark.	A. P. Conledge
Amor Darling School, San Jose, Calif.	Ralph Wyckoff
Carpenter High School, Carpinteria, Calif.	Yeo, Kistner & Co.
School, Chino, Calif.	Cole & Brunsford
Grammar School, Indio, Calif.	E. Chas. Parke
High School, Laguna Beach, Calif.	H. A. Nelson
McFarland School, McFarland, Calif.	Symons & Callamore
Needles Grammar School, Needles, Calif.	Dr. W. H. Micham
Grammar School, Santa Clara, Calif.	Ralph Wyckoff
Jefferson School, Santa Barbara, Calif.	Floyd E. Brunsford
Jr. High School, Santa Barbara, Calif.	Wm. H. Weeks
Shafter School, Shafter, Calif.	Symons & Callamore
High School, Smithgate, Calif.	Geo. M. Lindsay
Ukiah Union High School, Ukiah, Calif.	Davis & Franco
Washington School Add., Panama, Calif.	Peter Fisher
Kent School, Kent, Conn.	Shreve & Lamb & Harmon
Millard School, Millard, Conn.	Hagars & Mann
Parochial School, New Haven, Conn.	R. W. Fute
Stratford Grade School, Stratford, Conn.	F. J. Dixon
Stratford High School, Stratford, Conn.	F. J. Dixon
Cyprus School, West Haven, Conn.	R. W. Fute
School, West Haven, Conn.	R. W. Fute
Apalachicola School, Apalachicola, Fla.	Curry & Dowling
School, Panama City, Fla.	W. D. Willis
Fort Benning High School, Fort Benning, Ga.	Federal Government
Junior High School, Nampa, Idaho	Scott & Welch
Emerson School, Berwyn, Ill.	Robert M. Hyde
Romulan School, Danville, Ill.	Mr. Shadden
Romulan School, Hazelton, Ill.	Zimmerman, Saz & Zimmerman
Tinsley Park School, Tinsley Park, Ill.	Wainwright & Wilkins
Wisconsin Ave. School, Berwyn, Ill.	Robert M. Hyde
East Gary School, East Gary, Ind.	Wainwright & Wilkins
St. Anthony School, Evansville, Ind.	Edwin Berendes
Hobart School, Hobart, Ind.	Buckley, Shidner & Wainwright
Millard High School, Milan, Ind.	Wainwright & Wilkins
St. Paul's School, Tell City, Indiana	Thair & Sprague
Tell City School, Tell City, Ind.	Thair & Sprague
St. Patrick's School, Cedar Rapids, Iowa	C. E. Zelsky
New Emerson School, Marion, Iowa	Brai, F. Sutter
Sacred Heart School, Oskaloosa, Iowa	C. E. Zelsky
Teachers School, Emporia, Kansas	Brinkman & Hagan
Huron District School, Huron, Kansas	Chas. W. Shaver
Boys Catholic School, Kansas City, Kansas	Brinkman & Hagan
Lebo Dist. School, Lebo, Kansas	Rutledge & Herrin
Lyndon District School, Lyndon, Kansas	Ralph Stronell
Russell District School, Russell Spring, Kansas	Smith & English
Berea College, Berea, Ky.	Elmer & Anderson
Western State Teachers' College, Bowling Green, Ky.	Briston Davis
Calhoun School, Calhoun, Ky.	C. E. Kimberlin
Durand School, Durand, Ky.	C. E. Kimberlin
McHenry School, McHenry, Ky.	C. E. Kimberlin
Nortonville School, Nortonville, Ky.	C. E. Kimberlin
Owensboro School, Owensboro, Ky.	C. E. Kimberlin
Pudach School, (1), Paducah, Ky.	Leiter Daily
Western Ky. Industrial Durn.	C. Tandy Smith
Dubach School, Dubach, La.	Hunter & Boyd
School, Vernalis, Maine	Price & Walton
School, Chevy Chase, Maryland	Arthur B. Heaton
St. Peter and Paul School, Cumberland, Md.	E. H. Hitchens
North End School, Hagerstown, Md.	A. J. Klinkhart
District Training School, Laurel, Maryland	W. H. Harris
Rising Sun High School, Rising Sun, Md.	Clyde & Nelson
Adams School, Everett, Mass.	Thos. & Lord
Elementary School, Somerville, Mass.	J. P. Hoffmann
Palmer School, Palmer, Mass.	Harold Field Kellogg
Southern Jr. High School, Somerville, Mass.	J. P. Hoffmann
Western Jr. High School, Somerville, Mass.	Thos. & Lord
High School, So. Dennis, Mass.	Haynes & Mass
Armada School, Armada, Mich.	Walter Wyeth
Cerveny School, Detroit, Mich.	Stratton & Hyde
Miller School, Detroit, Mich.	Malcolmson, Higginbotham & Trout
Southwestern H. S., Detroit, Mich.	Malcolmson, Higginbotham & Trout
St. Augustine's School, Richmond, Mich.	Walter Wyeth
St. Michael's School, Dearborn, Mich.	Benjamin Baggett
Wilbur Wright S. School, Detroit, Mich.	Malcolmson, Higginbotham & Trout
Lowell School, Flint, Mich.	Malcolmson, Higginbotham & Trout
Carrage School, Port Huron, Mich.	Walter Wyeth
Elementary School, Wayne, Michigan	Warren S. Holmes Co.
High School, Waverland, Minn.	Finson B. Smith, Jr.
School, Walnut Grove, Minn.	F. J. Krause
Clover District School, Clover, Mo.	Don R. Sanford
Grade School, Ellis, Mo.	Ludwig Alt
Alt Grade School, Jennings, Mo.	Hulser Baum & Frouse
Everett Jr. High School, Lincoln, Neb.	Davis & Wilson
Roadside School, Monclair, N. J.	Arthur Ramhurst
Collingswood H. S. Add., Collingswood, N. J.	F. H. Roddy
Gibbs School, Gibbs, N. J.	F. H. Roddy
Manassas School, Manassas, N. J.	F. H. Roddy
Minot School, Minot, N. J.	Finson B. Smith
Nepesque City School, Nepesque City, N. J.	Alexander Merchast
School of the Epiphany, Grantwood, N. J.	Thomas Dunn
School, Batavia, N. Y.	Ed. B. Green & A. S. Hopkins
Hewlett School, Ray Park, L. I., N. Y.	Lucas H. Weeks
W. Babylon School, W. Babylon, L. I., N. Y.	Edward Hahn
No. Bellmore School, No. Bellmore, L. I., N. Y.	Edward Hahn
St. Czarina School, Buffalo, N. Y.	Joe E. Frasca
St. Peter and Paul School, Buffalo, N. Y.	Joe E. Frasca
Albany Ave. School, Freeport, L. I., N. Y.	Fred P. Wiederman
Columbus Ave. School, Freeport, L. I., N. Y.	Fred P. Wiederman
Gonzaga High S., Gonzaga, N. Y.	Ed. B. Green & A. S. Hopkins
Lakeview School, Lakeview, L. I., N. Y.	Fred P. Wiederman
Malverne School, Malverne, L. I., N. Y.	Fred P. Wiederman
High School, Penfield, N. Y.	C. Storr Barrows
Green St. School, Rochester, N. Y.	Walker S. Lee, Jr.
North Hill School, Rochester, N. Y.	Walker S. Lee, Jr.
St. Margaret Mary's School, Rochester, N. Y.	C. F. Lorenz
St. Basilian School, Rochester, N. Y.	C. F. Lorenz
St. Theresa School, Rochester, N. Y.	C. F. Lorenz
Public School, Romeville, L. I., N. Y.	Leitner, Bateman & Way
Central High School, Syracuse, N. Y.	A. L. Brunsford
Romeville School, Utica, N. Y.	Ragg & Hunkish
Central High School, Valley Stream, L. I., N. Y.	Fred P. Wiederman
Wanago School, Waukegan, L. I., N. Y.	Edward Hahn
Longfellow Junior High School, Yonkers, N. Y.	Howard Chamberlin
High School, Fremont, Ohio	S. H. Shively & Son
Perryburg School, Perryburg, Ohio	Brinck & Manger
Reinforced School, Reinforced, Ohio	Geo. Rheinfrank

STEELTEX FOR



BUILD WALLS AND CEILINGS WITH STEELTEX



The pure-fibrous backing of Ribbed STEELTEX Lath which deadens sound, was developed by the Mellon Institute of Industrial Research.



As the plaster is applied against the fibrous backing, the steel wire network becomes automatically embedded in the plaster.



Ribbed STEELTEX Lath is manufactured in conveniently-handled sheets. Each sheet measures a little more than one square yard.



HUNDREDS of the finest school buildings throughout the country have used STEELTEX. The outstanding merits and economies of STEELTEX CONSTRUCTION SYSTEMS are well known to architects, engineers and contractors everywhere.

STEELTEX is specified and used for school construction because it has proved itself over a period of many years. Today there are more than one half million STEELTEX installations. For walls, ceilings, suspended ceilings, and partitions, Ribbed STEELTEX Lath is widely used as a plaster base and reinforcement . . . is rapidly applied and plastered . . . material and labor application costs are lowered. The result is a first-class plastering job that is effectively insulated against heat and cold flow . . . is fire resistive (carries the Underwriters' 1 hour fire rating) . . . has desirable acoustical properties, high sound resistance . . . eliminates lath, joint or stud marks from showing on the finished plaster . . . Ribbed STEELTEX Lath also prevents falling plaster, and minimizes the tendency of any occurrence of plaster cracks. Every section of the plastered wall, ceiling, and partition becomes automatically reinforced in every direction against strains and stresses. In fact, Ribbed STEELTEX Lath has eleven distinctive features, all of which are found in no other lath.

Before you plan or build, get the facts. Write at once for descriptive literature about Ribbed STEELTEX Lath for interior plaster, and for the book "Modern Building Methods" which gives construction details about the various STEELTEX BUILDING SYSTEMS. Thousands have benefited from this literature. Simply fill out, and mail the coupon, on the next page. There will be no further obligation on your part.

Ribbed STEELTEX Lath for plaster and STEELTEX Channels form a practical and modern method of constructing school partitions.

Ribbed STEELTEX Lath for plaster is used for school ceilings, either nailed to wood joists or wire-tied to steel joists or suspended ceilings. The danger of falling plaster is eliminated.



SCHOOLS



BUILD FLOORS AND ROOFS WITH STEELTEX

Light-weight, reinforced concrete floors and roofs for schools provide permanence, fire-safety and rigidity of construction. **STEELTEX** Floor Lath, a combined reinforcement and form, is an engineered product designed for this class of construction, and has proved itself in structural value, economy, and speed of erection.

By virtue of its component units, **STEELTEX** Floor Lath provides a water-resisting backing plus a complete network of electrically-welded steel wire mesh for reinforcement. The concrete is poured onto **STEELTEX** Floor Lath. The heavy, corded-backing maintains proper consistency of the concrete, and minimizes droppings. Work can proceed in safety and comfort as **STEELTEX** Floor Lath protects the floors below even while the wet concrete is being poured. The manner in which the steel wire mesh is attached to the backing insures an automatic embedment of the mesh in the slab while the concrete is poured. The reinforcing wires are spaced to give maximum value to develop the full strength of the concrete slab. In addition, the quality of the corded-backing affords sound deadening, and makes **STEELTEX** Floor Lath especially desirable in the construction of floor slabs for schools.

STEELTEX Floor Lath has been used in hundreds of school buildings. Write for the book "**STEELTEX** FLOOR LATH For Concrete and Gypsum Floors and Roof Slabs." All construction details are fully explained. Use the coupon below.



STEELTEX Floor Lath is unrolled over the joists and cut to length; it is then attached to an end or anchored joist, drawn taut at the opposite end joist, and fastened by clips or wedges to intermediate joists.



The illustration above shows **STEELTEX** Floor Lath in an unbroken stretch of 212'.



(At right) Concrete is poured directly onto **STEELTEX** Floor Lath. The waterproofed, corded-backing assures against loss of concrete through droppings. The galvanized wire reinforcing mesh is automatically embedded in the slab as the concrete is poured.

(At left) **STEELTEX** Floor Lath comes in rolls 4' x 125' (500 sq. ft.) A heavy, fibre-board wrapper protects the material during shipment and brings each roll in the job in perfect condition.

STEELTEX WIDELY USED IN SCHOOL BUILDINGS

SCHOOLS	ARCHITECTS
Two Grade Schools, Fremont, Ohio	J. H. Shewley & Son
3 Grade Schools, Sylvania, Ohio	Geo. Reinhardt
Warren Cor. School, Toledo, Ohio	Leopold, Hobbs & Green
Waverly School, Waverly, Ohio	DeFoss & Donaldson
Indian School, Ardmore, Ohio	L. R. Carr
Couch Indian School, Couch, Ohio	Federal Government
Mead District School, Mead, Ohio	Albert Ross
Sequasha School, Park Hill, Ohio	W. E. Midgill
Wynn School, Wynn, Ohio	A. J. Lane
Grammar School, Kalamazoo Falls, Ohio	Howard R. Ferris
Allison Park School, Allison Park, Pa.	Pratt, Dwyer
South High School, Ambridge, Pa.	W. W. Williams
Amityville School, Amityville, Pa.	Schall & Richardson
Cherry Hill Grade School, Apollo, Pa.	Tillman Scherren
Kinkl Twp. Grade School, Apollo, Pa.	Tillman Scherren
Belle Vernon Grade School, Belle Vernon, Pa.	C. C. Compton
Penn Twp. School, Berwyn, Pa.	A. A. Widener
Bethel High School, Bethel Twp., Pa.	Howard C. Compton
Blairville H. S., Blairville, Pa.	H. N. Rogers & Fox Eng. Serv.
Bradford School, Bradford, Pa.	Thos. Hendryx
West Branch Grade School, Bradford, Pa.	Thos. Hendryx
Burgessburg High School, Burgessburg, Pa.	C. C. Compton
Liney School, Butler, Pa.	Private Plans
Cannonsburg Grade School, Cannonsburg, Pa.	J. M. Brull & Son
Cannonsburg High School, Cannonsburg, Pa.	J. M. Brull & Son
Parish School, Clarion, Pa.	Russell G. Howard
Clayville Grade School, Clayville, Pa.	Private Plans
Clarksburg Grade School, Clarksburg, Pa.	C. C. Compton
Compton Grade School, Compton, Pa.	W. G. Eklis & Co.
Cutter City Grade School, Cutter City, Pa.	Thos. Hendryx
Dry Tavern High School, Dry Tavern, Pa.	J. C. Brewster
Edinboro St. Teachers' College, Edinboro, Pa.	Meyers & Johnson
Jefferson Twp. High School, Eighty Four, Pa.	C. C. Compton
Eldersville Grade School, Eldersville, Pa.	J. M. Brull & Son
Elizabethtown High School, Elizabethtown, Pa.	C. C. Compton
Ford City School (2), Ford City, Pa.	Tillman & Scherren
Manor Twp. Grade School, Ford City, Pa.	Tillman Scherren
Frankville High School, Frankville, Pa.	Schall & Richardson
Franklin Grade School, Franklin, Pa.	J. G. Earl
Greensburg School, Greensburg, Pa.	Chas. Sorber
School, Greensburg, Pa.	Chas. Sorber
Harrisville Grade School, Harrisville, Pa.	W. G. Eklis & Co.
Industry Grade School, Industry, Pa.	W. Ward Williams
Derry Twp. School, Latrobe, Pa.	Chas. R. Sorber
Maplewood Grade School, Maplewood, Pa.	J. C. Brewster
Lower Twp. Grade School, McKees Rocks, Pa.	J. H. Phillips
Peter Twp. High School, McMurray, Pa.	C. C. Compton
Moham School, Moham, Pa.	Schall & Richardson
Carol Twp. Grade School, Mon City, Pa.	C. C. Compton
Rossmore Twp. School, Monaca, Pa.	H. Ernest Clark
Muhlenberg School Add., Muhlenberg Twp., Pa.	Schall & Richardson
Sumner Twp. High School, Newell, Pa.	C. C. Compton
School, Northampton, Pa.	Edith & Lantz
Drexel Institute Dormitory, Philadelphia, Pa.	Simon & Simon
Arsenal High School, Pittsburgh, Pa.	Schubert, Palmgren & Merrick
Knoxville Junior High School, Pittsburgh, Pa.	Pres. Deader
Larimer Ave. School, Pittsburgh, Pa.	Geo. H. Ransland
Lincoln Ave. School, Pittsburgh, Pa.	Thos. Hendryx
Prospect School, Pittsburgh, Pa.	James T. Stora
Princeton Grade School, Princeton, Pa.	C. C. Compton
Lower Heidelberg School, Reading, Pa.	R. F. Patterson
Red Lion Grade School, Red Lion, Pa.	Edith & Lantz
Robinson Addition, Robinson, Pa.	A. A. Widener
New Sewickley Twp. School, Sewickley, Pa.	W. Ward Williams
Shelby High School, Shelby, Pa.	E. D. Phillips
Sinking Spring School Add., Sinking Spring, Pa.	Schall & Richardson
Smethport Grade School, Smethport, Pa.	Thos. Hendryx
So. Brownsville Grade School, So. Brownsville, Pa.	Edith & Lantz
Trafford Grade School, Trafford, Pa.	C. C. Compton
Trafford High School, Trafford, Pa.	C. C. Compton
Thruway High School, Thruway, Pa.	W. W. Williams
Wall Grade School, Wall, Pa.	C. C. Compton
W. Kittanning Grade School, W. Kittanning, Pa.	Tillman Scherren
Baden Twp. Grade School, W. Newton, Pa.	H. E. Clark
W. Newton Grade School, W. Newton, Pa.	H. E. Clark
Waterford Grade School, Waterford, Pa.	Brent & Hicks
Wernersville High School, Wernersville, Pa.	Schall & Richardson
Uniontown High School, Uniontown, Pa.	Edith & Lantz
Ho. Vandergriff School, Mo. Vandergriff, Pa.	Tillman Scherren
Youngwood High School, Youngwood, Pa.	Edith & Lantz
Zelienople School, Zelienople, Pa.	W. W. Williams
Model School, Spartanburg, S. Carolina	C. C. Wilson
School, Dickinson, Tenn.	Daugherty & Gardner
Runge School, Runge, Texas	Giescke & Harris
Alamo Heights Jr. High, San Antonio, Texas	Harvey P. Smith
Brenham School, Brenham, Texas	Giescke & Harris
Bryan Jr. High School, Bryan, Texas	Giescke & Harris
Edinburg School, Edinburg, Texas	Giescke & Harris
Los Angeles Heights High, San Antonio, Texas	Harvey P. Smith
Nacogdoches School, Nacogdoches, Texas	Giescke & Harris
New Braunfels School, New Braunfels, Texas	Giescke & Harris
Riverside School No. 23, San Antonio, Texas	Albough & Strickland
High School, Springfield, Vermont	Hayes & Mann
St. Augustine School, Richmond, Va.	Walter W. York
Bagley School, Seattle, Wash.	F. A. Narumore
Webster School, Seattle, Wash.	F. A. Narumore
Kelly-Miller School, Clarkburg, W. Va.	E. C. Holmboe
Norfolk School, Clarkburg, W. Va.	E. C. Holmboe
School Building, Clarkburg, W. Va.	A. L. Shuman Co.
Grade School, Danville, W. Va.	H. J. Hinson
Grade School, Huntington, W. Va.	Frankson & Bouers
School Building, Marion County, W. Va.	L. A. & Leonard Riley
Parkersburg High School, Parkersburg, W. Va.	Brown & Plater
So. Charleston School, So. Charleston, W. Va.	W. J. Brown & Bragdon
Berke School, Racine, Wis.	R. J. Kramer
Clark Trade School, Milwaukee, Wis.	C. E. Witz
Manitowish Vocational School, Manitowish, Wis.	Wm. J. Kauter
Northside Jr. High School, Manitowish, Wis.	Fan Rys & De Goffke
Solomon Junior High S., Milwaukee, Wis.	Fan Rys & De Goffke
St. Mary's Academy, Fox Du Lac, Wis.	Schmitt, Gardner & Erickson
Grammar School, Vancouver, B. C.	H. W. Pante

ASBJ-932

NATIONAL STEEL FABRIC COMPANY
Pittsburgh, Pennsylvania
Please send (free) literature as checked:
☐ "Ribbed STEELTEX Lath for Walls, Ceilings and Partitions."
☐ "STEELTEX Floor Lath" (for concrete and gypsum floor and roof slabs).
☐ "Modern Building Methods."
☐ "STEELTEX Super-Wall Construction System." (Outside Walls).
NAME _____ (Give Title)
OCCUPATION _____
ADDRESS _____
CITY _____ STATE _____



NATIONAL STEEL FABRIC COMPANY

Union Trust Building Pittsburgh, Pa. U.S.A.

WORLD'S LARGEST MANUFACTURERS OF WELDED STEEL FABRIC

HERE - Tired Teachers Find More Peace Pupils Concentrate More Easily

IN THIS Coronado High School at San Diego, California, partitions sound-deadened with Cabot's Quilt prevent the passage of noise from one room to another. When children study, they study in quiet and so concentrate more easily. There is more peace here for tired teachers and their work is more effective.

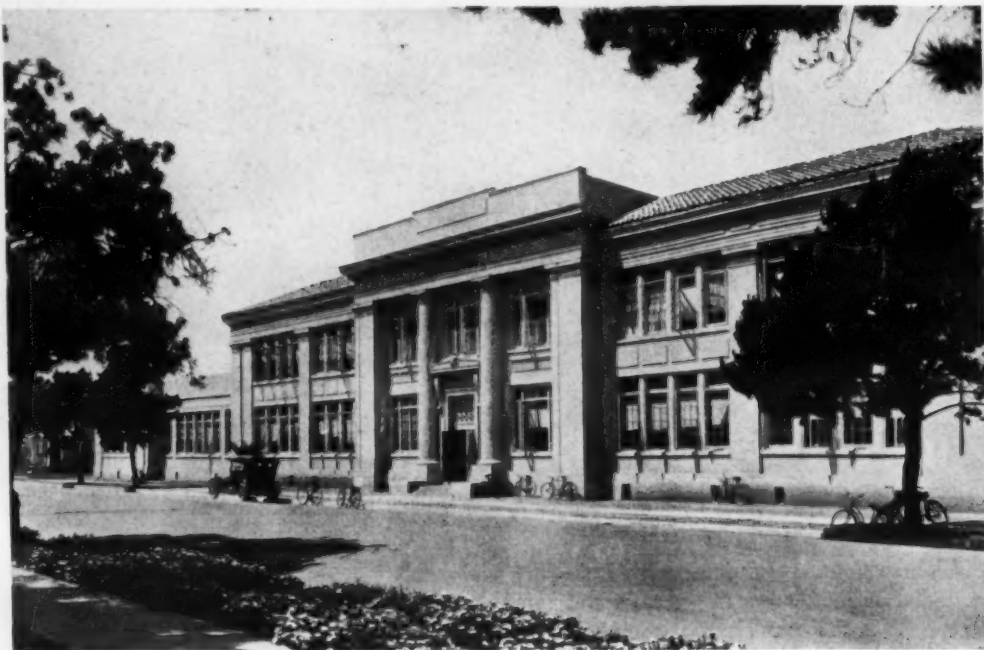
Here, Cabot's Quilt, highly efficient, low-cost sound-deadening material,—breaks up sound waves. "Quilt" is rot-proof, fire-resistant, cheap and easy to install, and does not pack down or lose its insulating power. *Every new school building should be sound-deadened with Cabot's Quilt.*

Cabot's Heat-Insulating, Sound-Deadening "Quilt"

Made by the makers of
Cabot's Creosote Shingle and Wood Stains

Send in the coupon below for highly
interesting and valuable information.

<i>Samuel Cabot</i> Inc. 141 Milk Street Boston, Massachusetts	
Gentlemen: Please send me your Laboratory Bulletin No. 5 on Sound-Deadening.	
Name	Address



Coronado High School, San Diego, California, Theodore N. Kistner, Architect. Classroom partitions sound-deadened with Cabot's Quilt.

School Board News

♦ Redford, Mich. The township school board has voluntarily reduced the salaries of the board members. The salary cuts affect all members and are retroactive to November 1.

♦ Chicopee, Mass. The employees of the school board raised \$1,800 in a drive in which every employee contributed a day's pay. Various other means will be adopted during the winter to increase the fund as it is needed.

♦ Clintonville, Wis. The county board of Wau-paca county has voted to effect a saving of \$2,000 in the payroll by a reduction of the salaries of county officials. The pay of the county superintendent and the supervising teachers was reduced by \$200, while that of the county board members was reduced 10 per cent.

♦ Michigan City, Ind. The school board has approved a proposal of the parent-teacher association to serve hot lunches to needy school children. The food is prepared by the parent-teacher organization at a central location and is then transported by truck to the schools where it is needed.

♦ Milwaukee, Wis. The school board has been asked to rescind its rule requiring bids for school construction to be accompanied by a certified check for 5 per cent of the bid. The board will adopt measures under which the building committee will have authority to reject any bid and to waive informalities.

♦ Evansville, Ind. A rule of the school board requiring the retirement of teachers at 70 years of age has been held invalid in a ruling given by the superior court in the Culver case. The court held that the contract of John Culver, formerly a principal in one of the elementary schools, could not be terminated on the basis of age alone. Mr. Culver upon reaching 70, had refused to accept dismissal, and after a board hearing, began a suit for \$270 for one month's salary. In its decision, the court held that the age limit did not come within the board's authority.

♦ Newark, N. J. Under a new administrative policy, the school board will hold one or two special conferences each month at which some administrative problem will be outlined by a member of the staff. The conference plan has been adopted as a means of informing the board members on activities carried on in the schools. At these conferences the superintendent, or his assistants, will explain to the board the merits or demerits of matters scheduled for discussion at the regular board meeting.

♦ State-Supt. F. G. Blair, of Illinois, in a recent statement, has commended teachers for sticking to their positions, even though many of them have been without pay for weeks or months. Not a single instance of a teacher resigning her position because of nonpayment of salary has come to the superintendent's office.

♦ Alton, Ill. The school board has agreed to cooperate in the coordinated community relief program. The truant officer of the school district acts as a contact officer between the schools and the community relief organization. Teachers and employees of the schools have contributed almost 100 per cent in the solicitation for funds.

♦ Miles Heights, Ohio. A taxpayers' mandamus suit has been begun in the common pleas court to compel the board of education to open the schools in the suburb. The suit, filed by the taxpayers and parents of school children, charges the board with making no effort to collect available money, or to accept offers of money from other sources.

♦ When a salesman asked the Millstadt, Ill., school board to enter into an arrangement whereby the pupils were to solicit subscriptions on a common basis, the board ruled against it.

♦ The Baltimore school board has cut all salaries 6½ per cent causing a reduction in the budget for 1932 of \$546,248.

♦ The school board of Altoona, Pa., has reorganized for the school year, with the election of Mr. J. Foster Meck as President, and Mr. William F. Sellers as Vice-president. The new president has been a member of the board since 1919.

♦ There was a decrease of 11,535 in the number of children enrolled in the public elementary schools of New York City, according to a recent statistical report of Supt. W. J. O'Shea. The high schools had 22,165 more students than last year, and the total number of children enrolled in all day schools was 1,085,089, which was an increase of 17,455 over last year.

♦ Murphysboro, Ill. Secretary Wm. Kimball of the school board has issued a report, showing a reduction in indebtedness from \$136,467 in July, 1929, to \$97,968 in July, 1931. The actual saving of \$38,498 in two years' time was effected by rigid attention to economies in property maintenance, janitors' duties, and other economies which resulted in greatly reduced operating costs.

♦ Joliet, Ill. The city and high-school boards anticipate that they will be able to sell \$250,000 in tax warrants to larger taxpayers in the city and township. Concerns paying large taxes have been asked to purchase the tax warrants in proportion to their share of school taxes. The warrants draw interest at 6 per cent and can be used in paying city and high-school taxes.

♦ Supt. William J. O'Shea, of the New York City schools, recently called attention to the board-of-education rule, which reads that "No teacher or pupil shall be permitted to contribute toward any gift or testimonial to a principal, teacher, superintendent, or other school officer, nor shall money or any other thing be in any case collected, taken or received from a teacher or a pupil for the purpose of presenting a gift or testimonial to any principal, teacher, superintendent, or other school officer. Collections of money from pupils for any purpose shall not be allowed unless by permission of the board of education."

♦ An item in the December number to the effect that a 50-per-cent-reduction in teachers' salaries had been ordered at Grand Rapids, Mich., is an error. The action was taken at Grand Rapids, Minn.

ARE *you* THE MAN—



who will
“HEAR
ABOUT
IT
LATER”?

WHEN a new building is piped, or when repairs are made in piping systems, someone must take the responsibility. Someone must say, “I chose that material”.

Are YOU that man? And will you ignore the *one* pipe material that has proved its ability to eliminate pipe failure throughout the entire life of the building?

That pipe is Reading Puddled Iron Pipe—the *only* kind of pipe today that in tens of thousands of installations, over generations of use, for thousands of purposes, has demonstrated that it can stand up!

No so-called modern “iron” pipe can do more than claim similar virtues. No pipe material used for merely tens of years has shown its immunity to all the attacks that pipe must endure.

Make your installations *safe* today by specifying the pipe that gives proved protection from trouble—Reading Puddled Iron Pipe, the pipe that has withstood the tests of time.

Write us today—let Reading Engineers give you the *facts* about the kind of Reading Puddled Iron Pipe that will best meet your needs.

READING IRON COMPANY, Philadelphia, Pa.

READING PIPE
PUDDLED IRON
Since 1836

Science and Invention Have Never Found a Satisfactory Substitute for Genuine Puddled Iron

One word means "walls of enduring beauty" —FORESTBLEND

Range and beauty of color, richness of texture—two very definite reasons why so many architects and school boards have decided on Forestblend Face Brick for their new buildings this year. In all parts of the country these

famous bricks been specified to insure the enduring beauty required in the new type of school structures.

If you have not seen Forestblends, write for information, color guides and samples.

The Sugarcreek, Shanesville High School, latest addition to the roster of Forestblend Schools.

Architects: Chas. J. Marr, New Philadelphia, Ohio

Contractor: Wm. Wendling & Sons, Dover, Ohio



FINZER BROS. CLAY COMPANY
Sugarcreek, Ohio

School Law

CONTRACT OF BUFFALO SUPERINTENDENT UPHELD

Dr. Frank P. Graves, Commissioner of Education for New York state, has rendered a decision in which he upholds the contract of a superintendent of schools. In the case of the school board of Buffalo, versus Dr. E. C. Hartwell, superintendent of schools, Dr. Graves has ordered that the resolution reducing the salary of the superintendent, be vacated, and that the board pay the superintendent's salary of \$15,000 per annum during six years from August 1, 1930. The Commissioner's decision is final.

Under the New York laws, boards of education are required to elect superintendents in first-class cities for a term of six years. Superintendent Hartwell was serving under a six-year contract tendered him at a salary of \$15,000 a year. He had drawn this salary for eleven months, when, under a change in the personnel of the board, it was voted to reduce the salary from \$15,000 to \$12,000. Superintendent Hartwell offered to take the reduction as a matter of economy, provided other city executives would also accept reductions, but none followed his example. Suit was thereupon brought.

(SCHOOL LAW)

School Lands and Funds

The courts will not interfere with the exercise of discretion by the board of education, unless the discretion is abused, or the action is arbitrary and unreasonable. — *Lincoln County Board of Education v. Carter*, 41 Southwestern (2d) reporter 660, 240 Ky. 112.

Teachers

The statutory provisions for tenure of office by teachers during good behavior has been held inapplicable to a teacher who completed a probationary period after the act went into effect, without receiving a permanent appointment (N. Y. Education law, § 872, subds. 1, 3). — *Holm v. Board of Education of City of Rochester*, 252 N. Y. S. 389, 141 Miscellaneous reporter 194, N. Y. Sup.

A statute providing for tenure of office by teachers during good behavior applies only to those receiving permanent appointment after the statute became effective and others who had served full probationary period, or rendered equivalent period of service satisfactorily before the statute became effective (N. Y. Education law, § 872, subds. 1, 3). — *Holm v. Board of Education of City of Rochester*, 252 N. Y. S. 389, 141 Miscellaneous reporter 194, N. Y. Sup.

A provision for the discontinuance of service of a teacher at any time during the probationary period does not give a teacher whose services are not discontinued permanent tenure, in the absence of a permanent appointment (N. Y. Education law, § 872, subds. 1, 3). — *Holm v. Board of Education of City of Rochester*, 252 N. Y. S. 389, 141 Miscellaneous reporter 194, N. Y. Sup.

RULES AND REGULATIONS

♦ The rules adopted by the Bloomfield, N. J., board of education provide that "no charitable appeals may be laid before any class. No person may visit any school, or class, to see any teacher or pupil upon personal business of any kind during school hours."

♦ The County Court of Appeals at Frankfort, Kentucky, has ruled that a county board of education has no authority to consolidate school districts where the places of abode of any large number of pupils of the district are not within reasonable walking distance of the school unless transportation is provided. The decision upheld the action of the Knox Circuit court, which held invalid a proposed consolidation of some Knox county school districts, where the pupils lived 20 miles from a school and no transportation was provided.

♦ Dr. William G. Ward, a member of the Lynn, Mass., school committee, holds that several of the resolutions recently adopted by that body are illegal. The section quoted by Dr. Ward provides for a majority vote of the whole committee, while another section provides that the committee operate under the rules of Cushing's Manual. The manual states that a majority of the members present may carry a motion. It was suggested that the rule probably was intended to read:

"The votes of a majority of the members of the whole committee shall be necessary for the passage of any order, recommendation, resolution, or vote for the election of teachers or other employees."

This would confine the rule to the election of teachers and not to every resolution of the committee as the rule now provides.

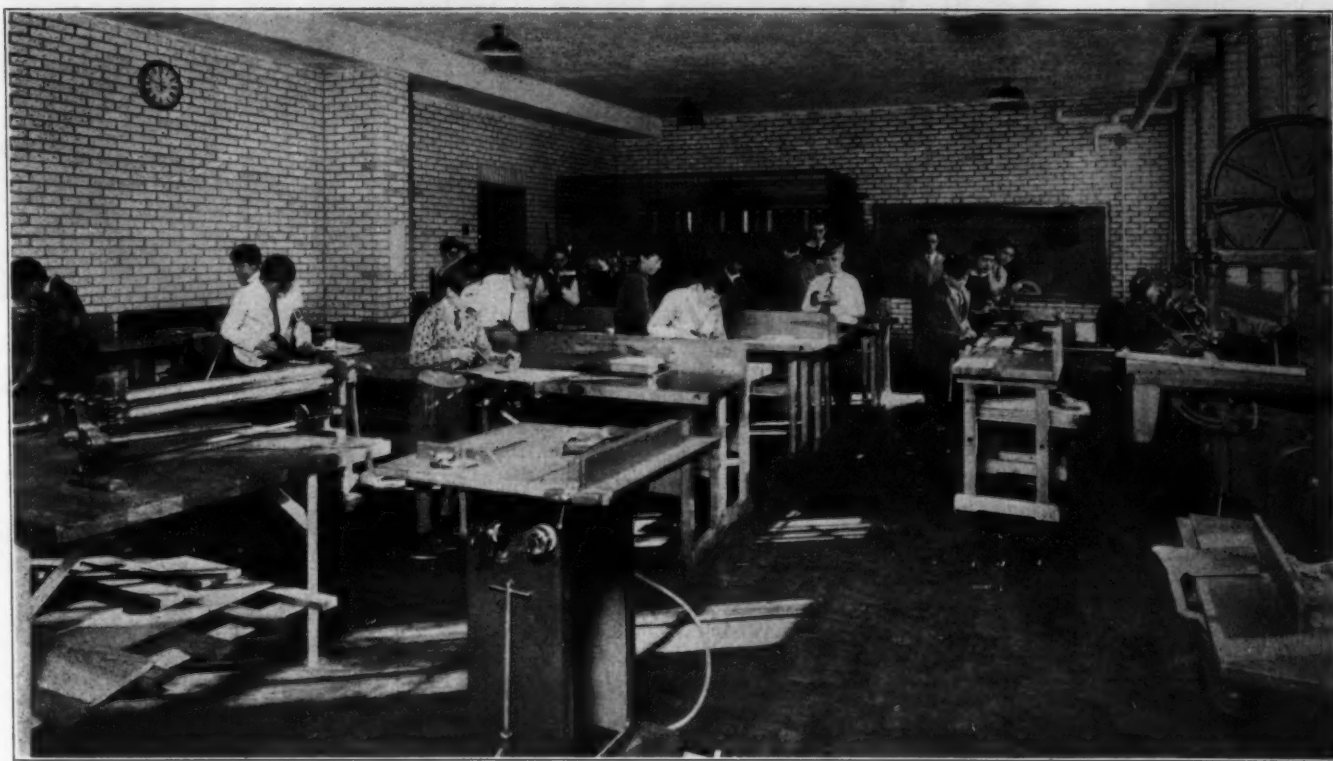
♦ The board of education of Hinsdale, Ill., permits the use of its schools for Sunday classes in religion upon the payment of a rental charge.

♦ The Racine board of education proposes to revise its rules in order to combat the flood of propaganda and free advertising, which has found its way into the schools.

♦ The board of education of La Salle, Ill., has adopted a rule forbidding school children from participating in public street parades. The action is due to an injury which befell a girl whose parents are now seeking compensation.

♦ St. Louis, Mo. The school board has revised its rules governing soliciting in the schools. The new rule reads as follows: "The schools shall not be used for the purpose of promoting any commercial or advertising activity resulting in private, personal, or financial gain. Principals and teachers in the schools are prohibited from distributing or exhibiting any kind of article or advertisement for the promotion of any commercial enterprise, or permitting others to do so in the school buildings or upon the school premises. They may not supply for commercial uses the names of pupils enrolled in the schools. They may not permit the taking of photographs, except as authorized by the board of education. They may not allow any contributions for any purpose whatever from the pupils under their charge or the distribution of receipts or other evidences of purchase from or donation to any private organization, nor shall they receive any presents or gifts from their pupils."

♦ Harvey, Ill. Under a new policy, the teachers in the city schools are being paid this year in twelve installments, in place of ten. All school employees have agreed to accept a 1-per-cent deduction in salary which is to go toward unemployment relief.



Wood working shops floored with Bloxonend. Daniel Webster Junior High School, Quincy, Mass.
Frank Irving Cooper Corp., Architects. Gymnasium also floored with Bloxonend.

Floor Your Shop Rooms with **BLOX-ON-END**

Study the picture above. Note the tiled wall. . . natural light and air. . . a floor of genuine BLOXONEND. This represents a typical shop room in schools designed by the Frank Irving Cooper Corp.—prominent Boston architects.

Students and instructors take added interest in vocational training in surroundings such as these. The restful floor of BLOXONEND eliminates leg weariness. . . it provides a surface that is bright and clean in appearance. . . a floor that can't splinter and is inherently non-slip. This floor stays smooth and outlasts the average building.

Nearly all prominent school architects specify BLOXONEND for school shops and gymnasiums. It is the genuine strip block type. We will gladly send you a free descriptive booklet on request.

CARTER BLOXONEND FLOORING COMPANY

KANSAS CITY, MISSOURI

Branch Offices in Leading Cities

BLOX-ON-END

FLOORING



*Lays Smooth
Stays Smooth*

Bloxonend is made of Southern Pine with the tough end grain up. It comes in 8 ft. lengths with the blocks dovetailed endwise onto baseboards.



No. 955—
Note Book Case

No. 9565—
Cabinet And Supply Case



Higher Utility Value At Better Purchasing Price

The expansive factory facilities distinguishing Kimball's laboratory and vocational furniture production, and the expertly thorough understanding of this important branch of school room requirement, obtain for the purchaser the two essential advantages combined in one: *higher utility value, at better purchasing price.* The large cloth bound Kimball "Laboratory And Vocational Furniture" Catalog is interestingly complete and valuable to have and refer to . . . sent gratis upon request.

W. W. KIMBALL COMPANY, CHICAGO, ILLINOIS
Established 1857

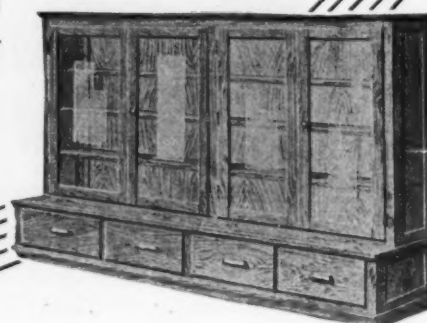
Laboratory and Vocational Furniture Division
306 South Wabash Avenue
A. E. Kaltenbrun, Director of Sales.

Eastern Sales Offices
105 West 40th Street
New York City.



No. 657—
Chemistry Fume Hood

No. 990—
Apparatus Case



KIMBALL BUILT LABORATORY AND VOCATIONAL FURNITURE CHICAGO

The School Superintendent and the New Building Program

Raymond W. Nash, Supt. of Schools, Ticonderoga, N. Y.

A great deal of progress has been made during the past few years toward placing the school superintendent in the proper relation to his school board. In the more progressive school systems there is but little doubt that he has come into his own. In such systems, we find him recommending his teachers, selecting the textbooks which he wishes to use, suggesting and advising changes in curricula, as well as carrying out many other programs which he has planned.

There remains, however, in many cases one program in which the school executive has not found his place or has not been allowed to have it—the new school-building program. The more I view this situation the more I am convinced that schoolmen more than school boards are at fault for this state of affairs.

Some school heads shun the new school-building program because they fear that something may happen which will jeopardize their positions, so they avoid all responsibility in the matter, and leave everything to their boards of education. Too few consider it their duty to head the program, bear the brunt of the battle, if there is one, and there usually is, and fight to the bitter or sweet end. Others feel that they should advise their boards in such a matter the same as in any other school program.

Some school boards in small communities would sidestep a building program if they could. But once forced into it, they move along the same as in other school matters—without consulting their school superintendent regarding a single detail. Some boards of education have implicit faith in their school executive. They

know his capacity for work and promptly place upon his shoulders the responsibility for a successful building campaign, a well-planned and equipped building, and all the worries appertaining thereto. To sum up their position in the matter would be to say, that they feel that all they are called upon to do is to ratify the recommendation and plans which the school head and the architect have made. Other school boards go about a building in a more coöperative and businesslike manner. As a group of citizens who represent the taxpayers, they expect to bear the brunt of the school campaign battle and count it their duty to go out and contend for what they and their superintendent know is needed in the way of a new building. They expect their school superintendent to advise them in all building and equipment matters which concern the administration and organization affairs of the school.

Superintendent Should Help

My thesis here is that no school board in any school district can intelligently plan a new school building unless it has the facts that only a capable school administrator can furnish. Yet many school boards are attempting the impossible every year. The following are a few of the more glaring results:

1. Insufficient room in new building for present school enrollment.
2. Inconvenient arrangement of rooms.
3. Unsuitable equipment.
4. Improper room sizes.
5. Waste space.
6. Poor lighting.
7. Building not expandible.

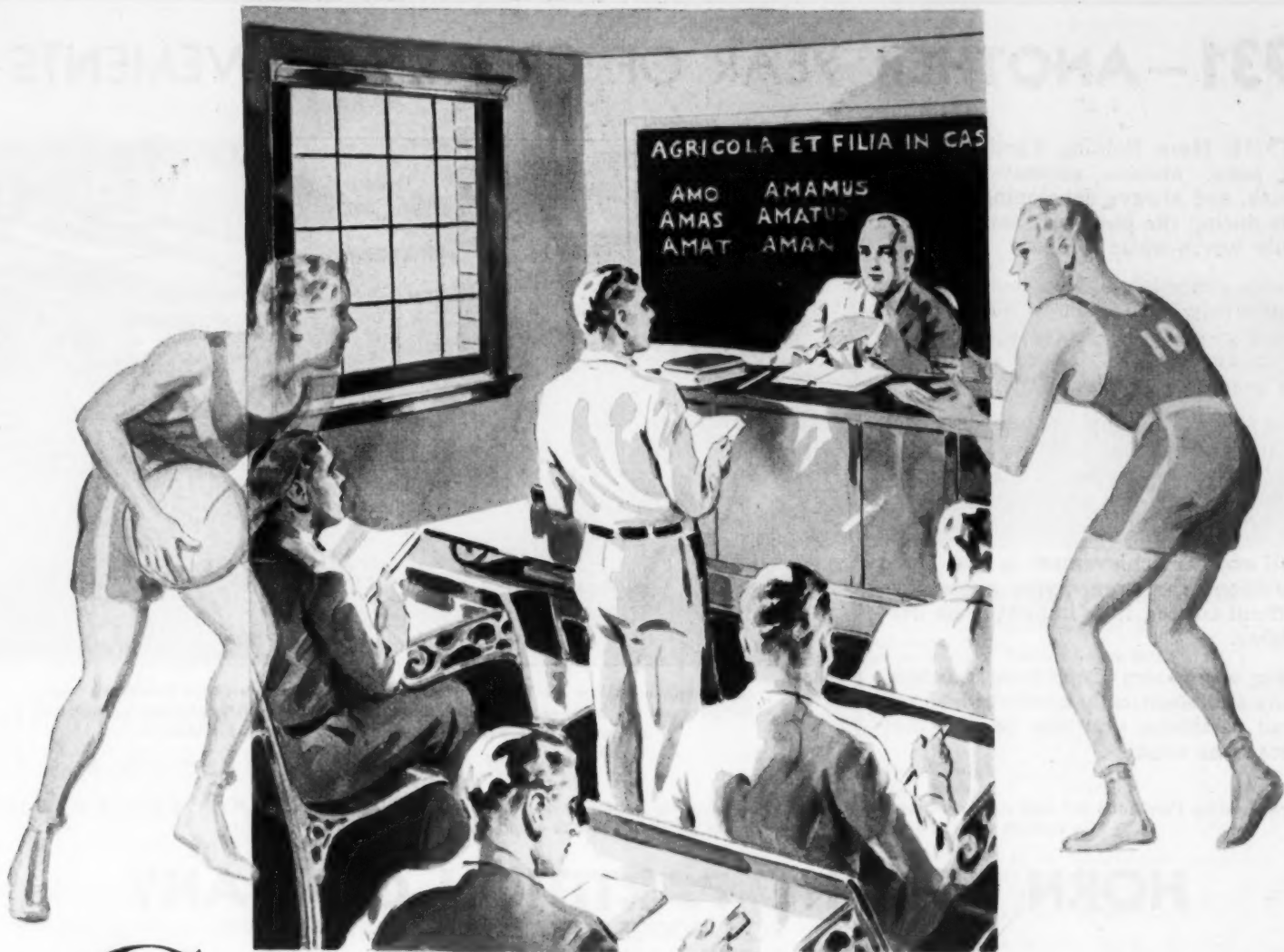
These and many others are the fruits of the work of school boards that do not place upon the school superintendent his proper responsibility in the new school building program.

A great many school superintendents, on the other hand, can only blame themselves for the poorly equipped and ill-planned buildings which are theirs. A short time ago I talked with a schoolman who proved this point. A new school building was being erected in his district, he told me. I had just completed a new structure and offered him access to any material in my files, which might be of help to him. Imagine my surprise when he told me that he had paid no attention to the new building and its equipment nor would he unless invited to do so. He felt that other school matters took so much of his time that he could not extend his interests to the building program. He stated that he regarded the building program as an issue which the taxpayers had to decide, and felt that the board of education should "put it over." His real stand in the matter, however, was revealed in his final disposal of the subject when he said in a sort of knowing way, "You know, a lot of good schoolmen have lost their jobs because of new school buildings."

Provide the School Board With Facts

It is a primary duty of the school superintendent to take a very active interest in a new school-building program. He should not, I feel, be called upon to bear the brunt of the building campaign, but he should be expected to have all the necessary information in the form of facts, statistics, and the program for future development of the school to place in the hands of the school-board president and all others interested. Leadership to this extent at least is a duty which he cannot evade. I do not expect the school superintendent to be the school archi-

(Concluded on Page 82)



THE GYM CLASS VISITS THE LATIN CLASS

—uninvited..!

Acousti-Celotex sound absorbing tiles applied to the ceiling of your gymnasium will subdue the racket of games and noises ordinarily transmitted to adjoining classrooms—subduing reverberations in the room where they originate.

Racket is absorbed before it has a chance to travel to other rooms.

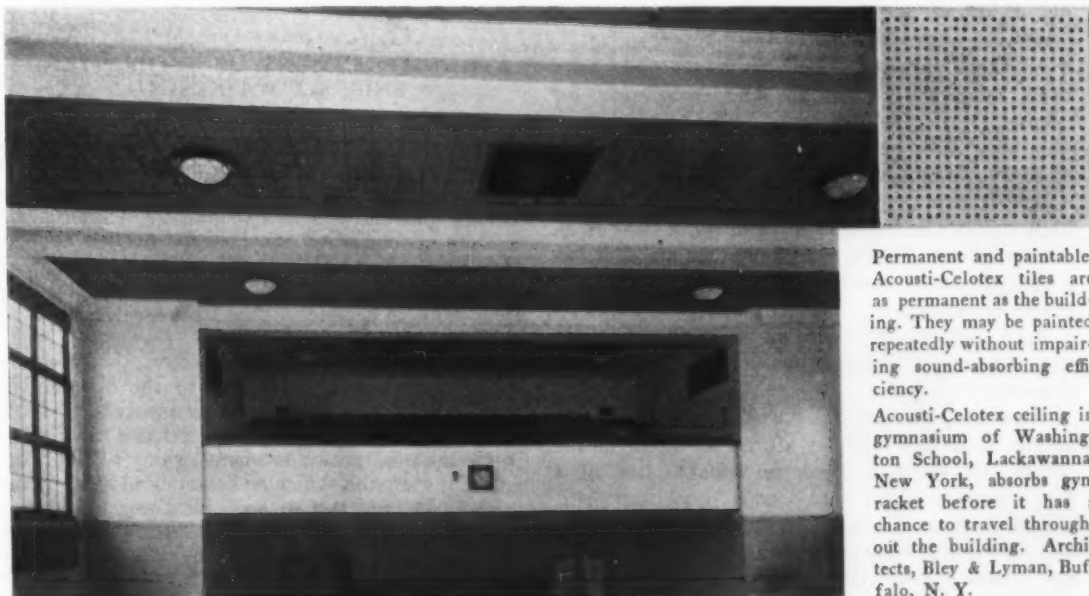
Acousti-Celotex also quiets noise in classrooms, corri-

dors, swimming pools and cafeterias. It improves the acoustics of assembly and lecture halls.

Acousti-Celotex comes in attractive tiles which are easily applied in any building, old or new. No expensive alterations are necessary—tiles are applied directly to the old ceiling.

These tiles may be left in their natural buff color, or painted to conform with decorative plans.

Acousti-Celotex contracting engineers, trained in acoustical problems, install every Acousti-Celotex job. The school architect or school board may secure their services for a survey without cost or obligation. For an appointment fill in and mail the coupon below.



Permanent and paintable. Acousti-Celotex tiles are as permanent as the building. They may be painted repeatedly without impairing sound-absorbing efficiency.

Acousti-Celotex ceiling in gymnasium of Washington School, Lackawanna, New York, absorbs gym racket before it has a chance to travel throughout the building. Architects, Bley & Lyman, Buffalo, N. Y.

The Celotex Company, 919 N. Michigan Avenue, Chicago, Illinois. Sales Distributors throughout the World. In Canada: Alexander Murray & Company, Ltd., Montreal.

ACOUSTI-CELOTEX
CANE FIBRE TILE
For Sound Absorption

ACOUSTI-CELOTEX SERVICE

Fill out and mail to The Celotex Company for the appointment of an engineer to analyze your acoustical and noise problems. No cost. No obligation.

Name.....
School.....
Street.....
Town..... State.....

1931—ANOTHER YEAR OF GREAT ACHIEVEMENTS—

THE Horn Folding Partition Company, always abreast with the times, and always developing the best, has during the past year accomplished truly worth-while things.

Motor control has been perfected and can be fully recommended for the larger installations. The safety equipment is of exclusive Horn design, and affords the greatest in protection.

The longest folding partition, as well as the highest, has been installed, giving further proof that Horn can make partitions any size and still guarantee positive satisfaction.

Still another achievement is that Horn Partitions can now divide a bleacher without cutting it or impairing its usefulness.

Being originators of top hung, mechanically and electrically controlled, sound proof partitions, you may be sure that there is no equal.

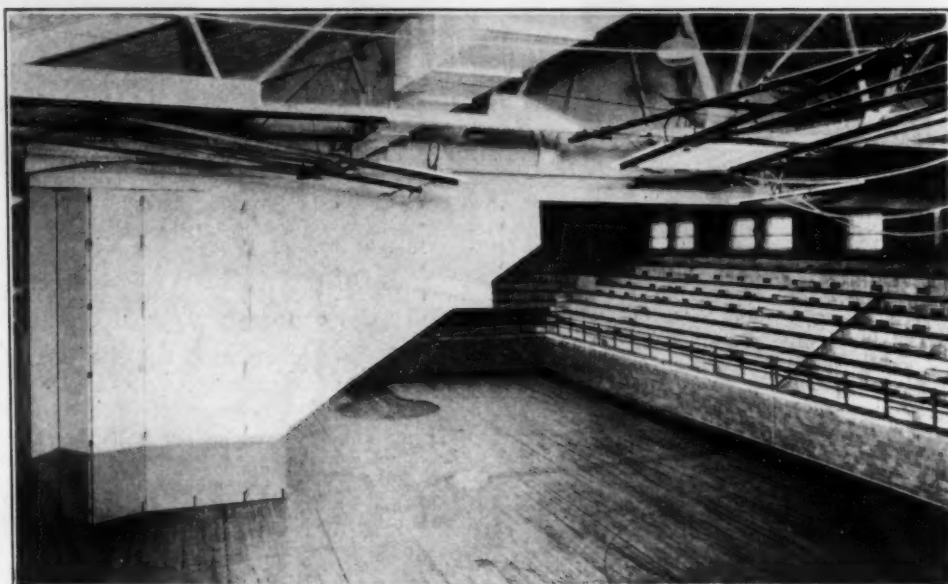


Illustration shows how the Horn Partition is cut to meet the profile of bleachers at right. Utmost care and long experience are alone responsible for this successful installation. No matter what YOUR problem may be, HORN can solve it.

Horn Folding Partitions are sold only completely installed. The partition sections are manufactured in our own large factory and each installation is custom built. The widespread use from coast to coast is ample proof of the superior quality.

HORN FOLDING PARTITION COMPANY

FORT DODGE, IOWA

REPRESENTATIVES IN ALL PRINCIPAL CITIES

A Real HORN Installation costs no more than ordinary wood folding doors.

(Concluded from Page 80)

tect, but I do maintain that it is his duty to understand the organization of the school and its needs, to provide the architect and the building committee with complete schedules of present and future needs, with facts about the probable growth, the financial ability of the community, etc.

The superintendent should work in close harmony with the architect in laying out the plans for the new building so that the board of education may pass intelligently upon the plans and specifications and the financial program. The superintendent is not a clerk of the works to supervise the construction of the building in detail, but it is his duty to visit the building very frequently during its erection. If he does it in common with one or more practical members of the board, he will save much dissatisfaction and many extras later on.

I would not necessarily expect the school executive to assume full charge of purchasing the new equipment for the building, although this has been done in a very satisfactory way by a number of schoolmen. I do insist, however, that he shall understand the needs and desires of department heads and teachers so that he can counsel with the board of education on the specifications for all equipment not included in the general contract and separate contracts for heating, plumbing, and electrical work.

Remodeling Problems Important

A necessary part of many school-building programs is the reconstruction of buildings which are in good physical condition, but which require rearrangement and modernization in order to fit the newer educational program and the changes in school enrollment. Here the competent schoolman can render invaluable service to the school board, if he masters the intricacies of the situation and recommends a practical

solution for each given problem. The following actual experience of a New York state superintendent will illustrate the point:

The board of education in a certain village was about to plan a new school building. It was at that time using a large, two-story brick building for some of the grades and all of the high school. Because of congested conditions, the basement had been partitioned into rooms for high-school classes. Members of the board suggested that a new building should be constructed to house only the high-school children. They suggested that the basement rooms of the old building (which were poorly lighted, damp, and improperly ventilated) be used as shops and cooking laboratories for the junior high school, and that the rooms on the first and second floors serve as quarters for children from kindergarten through junior-high-school age. If the new building had been erected and the old building reconstructed according to this schedule, here would have been the results:

1. Four industrial-arts shops would have been necessary as well as the equipment for them.
2. The state would have condemned the use of the basement rooms.
3. Because of the size of some of the former high-school classrooms they could not have been converted into grade rooms; hence, an addition to the old or the new school building would have been necessary.
4. A difficult problem of administration in the old school building would ever have been present.

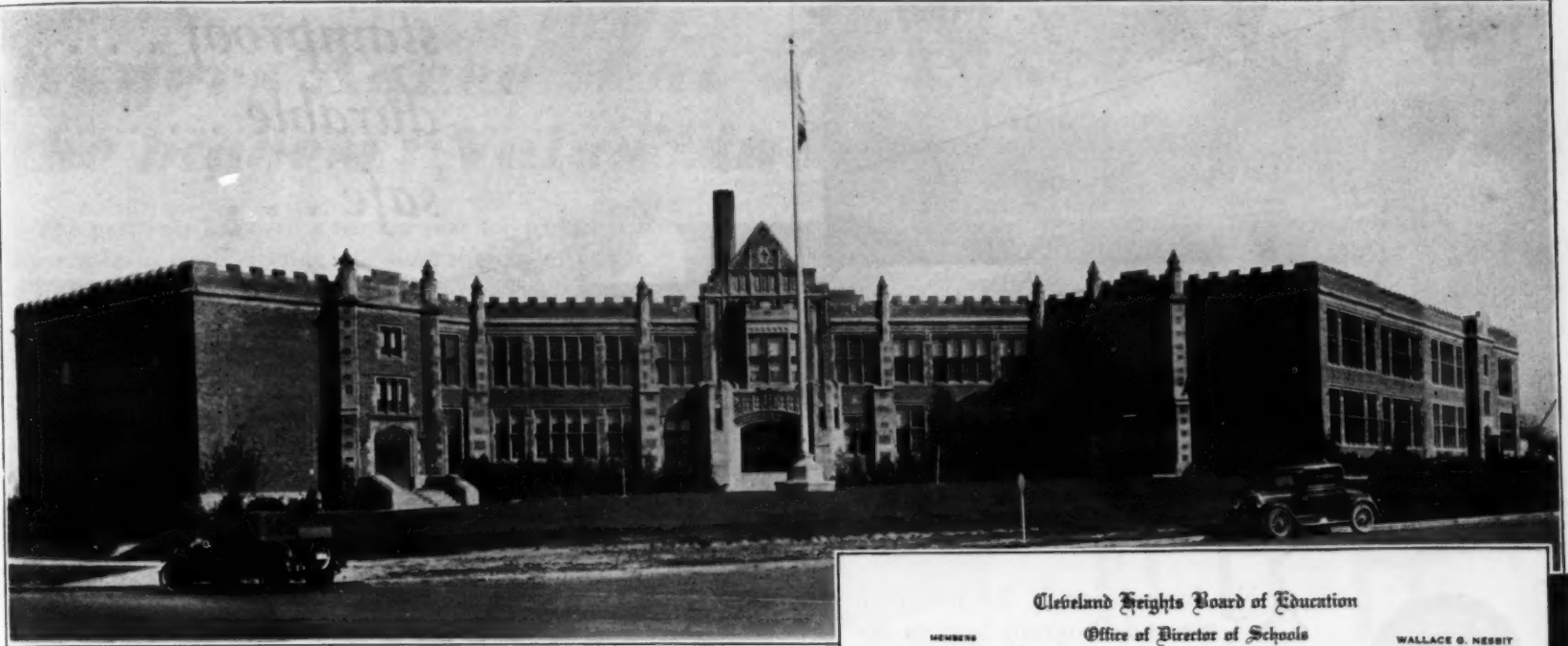
However, the school superintendent in the above situation had a different idea about things. He recommended the construction of a new junior-senior high-school building with common shops for both. He suggested the basement rooms for use as central supply and storage rooms for the district, thus saving the con-

struction of such rooms in the new building. He recommended that the rooms on the first and second floors should be used for children from kindergarten through the sixth grades. A large-sized room and a small one happened to be located side by side. The larger room was sizeable enough for all the kindergarten activities, so he advised its use for the major portion of these activities and the smaller one for all such projects as kindergartners usually carry out. Another small room was needed to displace the old, insanitary toilets in the basement. The large high-school study room, according to his plans, could be remodeled into a combination play-assembly room. Only a relatively few alterations were thus necessary to reconstruct the old building into a serviceable elementary-school building. It seems needless to say that a bad situation was saved when the board in the above instance took the superintendent into their confidence.

THE DEPARTMENT OF SUPERINTENDENCE AT WASHINGTON

The sixty-second annual meeting of the Department of Superintendence, to be held February 20-25, at Washington, will devote considerable time and attention to the problems of the schools arising from the present economic depression. Committees appointed at the Detroit meeting to plan the cooperation of educational, industrial, and political leaders of the country, expect to bring their work to a close in time to present their plans at the meeting.

An important feature of the convention program will be the honor to be paid to the birthday of George Washington on the 200th anniversary of his birth. Washington's faith in education is manifested in the now outgrown academy which he founded, and in the support which he contributed in his home town of Alexandria. Citizen, soldier, farmer, scholar, and statesman, George Washington typifies the dynamic, far-seeing patriot who was one of the nation's pioneers.



"THE FLOORS IN OUR SCHOOL HAVE CAUSED MUCH FAVORABLE COMMENT," says the Director of Schools at Cleveland Heights

Your floors can be made to reflect credit to your School too if they are maintained with Vestal Products.

"Your Products Have Been Used as Standard on All Our Wood and Linoleum Floors for the Past Two Years," further writes Mr. Wallace Nesbit, Director of Schools.

Now during vacation time PYRA-SEAL and PYRA-COTE your floors and end your floor troubles.

Write us regarding VESCO-SEAL, the permanent Gymnasium Floor Finish.

Cleveland Heights Board of Education

Office of Director of Schools

MEMBERS
JAMES E. CAMPBELL, President
CHARLES H. CLARK, Vice President
W. L. EGGERS
JOHN FISH
JOHN T. SCOTT.

Cleveland Heights, Ohio

WALLACE G. NESBIT
DIRECTOR OF SCHOOLS
J. MAYNARD
CLERK

March 24, 1931.

The Vestal Chemical Co.,
St. Louis, Missouri.

Gentlemen:

The floors in our schools have caused much favorable comment by school authorities and visitors in general. You will undoubtedly be interested in this, as all of these floors are treated with your products.

I am naturally quite pleased with the results obtained, because floors and floor treatment have been my hobby for over seven years. During this time I have had products of various manufacturers put through all kinds of tests. As a result of my experience and these tests, your products have been used as standard on all of our wood and linoleum floors for the past two years. The floors treated with Vesco-Seal and Vesco-Lite or Pyra-Seal and Pyra-Cote have proven very satisfactory. Although either material produces a good looking, easily maintained floor, Pyra-Seal and Pyra-Cote have been adopted as our standard. This treatment gives the floors a clear wax finish that is non-slippery and easily and cheaply maintained. Scrubbing has been entirely eliminated, and I have found that it is only necessary to machine polish the worn parts once a year. The daily cleaning retains the brilliant natural finish of the wood.

I gladly welcome the inspection of my floors at any time by any one who is interested, and can be referred to for more information regarding the treatment I have followed.

Yours very truly,

Wallace G. Nesbit
Director of Schools.

WGN:MI

Date.....

Vestal Chemical Laboratories, Inc.
St. Louis, Missouri

Please send literature and further information about the VESTAL METHOD of WOOD FLOOR MAINTENANCE.

Name.....

Address.....

City..... State.....

1-32

*Mail the
COUPON
Today*



Vestal Treated Wood Floors leave a clean, hard surface, easily and economically maintained. All they require is a light sweeping each day with a Vestal Buffing Mop to keep them clean and beautiful.

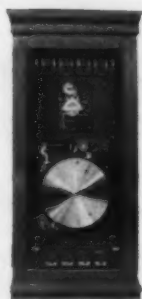
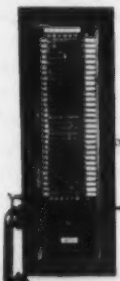
A Vestal Floor Maintenance Engineer will make a survey of your floors and submit recommendations.

VESTAL CHEMICAL LABORATORIES, INC.
ST. LOUIS NEW YORK



The Moses Brown School, Providence, R. I.

FOR MORE EFFICIENT and ECONOMICAL SCHOOL OPERATION

International
Class Room
ClockInternational
Corridor GongInternational
Program CabinetInternational
Cross-Connecting
Board

AN International Supervised Time and Program System increases the average school's operating efficiency *at least ten percent*. This means that a correspondingly larger portion of the public dollar is made available for pupil instruction.

Teachers or Assistant Principals, entirely relieved of the daily routine problems connected with class movements, are enabled to devote more time to other administrative work. Periods are standardized—classes are moved without confusion and teachers' efforts become more effective.

This is the only method of school time control that produces 100% results—yet the installation cost is usually but one-thirtieth of one percent of the original building expenditure. The ten percent increase in efficiency will pay for a complete system many times over.

Mail the coupon below for your copy of "Time Control in the School." Sending for it implies no expense or obligation on your part.

INTERNATIONAL
SUPERVISED

INTERNATIONAL TIME RECORDING CO.

Division of

International Business Machines Corporation

International Time Recorders and Electric Time Systems
International Electric Tabulating and Accounting Machines
Dayton Moneyweight Scales and Store Equipment
International Industrial Scales

GENERAL OFFICES

270 Broadway
New York, N. Y.



Branch Offices and
Service Stations in
All Principal Cities

THE INTERNATIONAL TIME RECORDING CO.

270 Broadway, New York, N. Y.

Please send me a copy of your booklet "Time Control in the School."

Name _____

School _____

City _____

State _____



*stainproof . . .
durable . . .
safe . . .*



No wonder this
modern school floor *lasts
longer . . . costs less*

IF "Made to Combat Carelessness" were stamped on every tile, it would truly describe Johns-Manville Tile Flooring. This long-wearing floor will stand years of abuse that ruins the appearance of an ordinary flooring in a few weeks.

Mud and water tracked in on rainy days will not mar its surface... inks and the ordinary acids can be wiped off without leaving a trace... it can be washed and cleaned year after year without losing its lustre.

No one will be injured by slipping on this floor. In classrooms and corridors, in school cafeterias and administrative offices, Johns-Manville Tile Flooring is quiet, comfortable and safe underfoot whether



wet or dry. Its resiliency takes the noise out of hard heels and hurrying footsteps. Its decorative and pleasing appearance harmonizes with any school interior. Its colors do not fade.



Always dignified, cheerful and attractive in appearance, Johns-Manville Tile Flooring is available in a variety of colors and with tiles both oblong and square.

Johns-Manville

TYPE A

Tile Flooring

We will gladly supply complete information on this economical school flooring. Free booklet—"Johns-Manville Tile Flooring Type A" will be sent to you promptly. Either call the Johns-Manville local distributor or address Johns-Manville, 292 Madison Ave., New York.

Buyers Agree that Kewaunee represents the biggest "Value" in Laboratory Furniture

The past year has been a banner year for Kewaunee. Buyers, being more exacting and more thorough in their search for the greatest dollar's worth of value, agreed that Kewaunee Laboratory Furniture offered most for their money. Their agreement was reflected in orders given to Kewaunee. Harvard University Institute of Biology, University of Illinois Medical and Dental Laboratory, Duke University Chemistry Department and many others, for years users of Kewaunee Equipment, placed some of their largest orders in 1931.

Kewaunee continues in 1932 to offer the finest Laboratory, Vocational, Home Economics and Library Furniture values. If your schools need new equipment, be sure to write for the Kewaunee Book—the largest and most complete catalog of the industry. It is sent, without charge, to school furniture buyers. Write on your institution's letterhead.

Kewaunee Mfg. Co.
LABORATORY FURNITURE EXPERTS

C. G. CAMPBELL, PRES. AND GEN. MGR.

Chicago Office
14 E. Jackson Blvd.

101 Lincoln St., Kewaunee, Wis.

BRANCH OFFICES

Philadelphia
Greensboro, N. C.
Miami
Birmingham
Louisville
Nashville
Columbus

Lansing, Mich.
Adrian, Mich.
Indianapolis
Jackson, Miss.
New Orleans
Houston

El Paso
Toronto, Ont.
Oklahoma City
Kansas City
Little Rock
Lincoln, Nebr.

Des Moines
Minneapolis
Grand Forks, N. D.
Aberdeen, S. D.
Denver
Salt Lake City

New York Office
70 Fifth Avenue

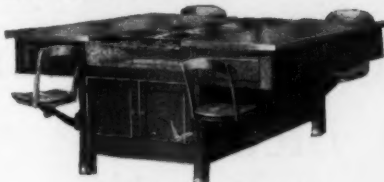
Phoenix
Los Angeles
San Francisco
Portland, Ore.
Spokane
Crystal Falls, Mich.
Montreal, Que.



Drawing Table No. L-2028



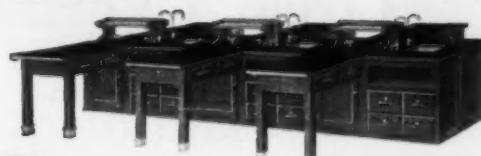
Chemistry Table No. D-764



Domestic Science Table No. K-1786



Library Table No. 5143



Lincoln Science Desk No. D-503



Write for Kewaunee lock folder. Explains full line of master keyed combination locks. Sent on request.



Storage and Display Case No. G-1358

SOLVING COMMON ACOUSTICAL PROBLEMS OF SCHOOLS

(Continued from Page 51)

The acoustical difficulty in many rooms is due to extraneous noise which reaches these rooms from adjoining corridors or foyers. In some cases, soundproofing the doors leading from these noisy spaces, according to the directions given, may solve the problem. In other cases, it may be necessary to reduce the noise in the spaces by installing sound-absorbing material upon the ceilings of such foyers or corridors. This is especially true of auditoriums which are not sufficiently isolated from street noise by intervening doors, so that traffic noise penetrates into the room.

In some school auditoriums the chief acoustical difficulty is due to an inadequate, poorly designed, and noisy ventilating system. Such a system generates so much noise that the speaker cannot raise his voice sufficiently to be intelligibly heard above it. In some cases the whole ventilating system needs to be redesigned. If the noise is due to the motor or fans running too rapidly, or to too much air being forced through undersized ducts, the difficulty may be solved by slowing down the speed of the motor and fan. This, of course, cuts down the volume of air moved. In other cases adjusting the bearings on the motors or fans and placing these vibrating machines upon properly insulated bases may help. Lining the ventilating ducts with an absorbent material, preferably starting from the fan end, will prevent the duct from acting as a speaking tube in transmitting the sound into the auditorium. Baffles lined with a sound-absorbing material may be placed over the outlet grilles about 1 ft. from the wall in order to deflect the air and absorb the sound (Fig. 2).

In gymnasiums and swimming pools, the complaint is made that the instructor cannot intel-

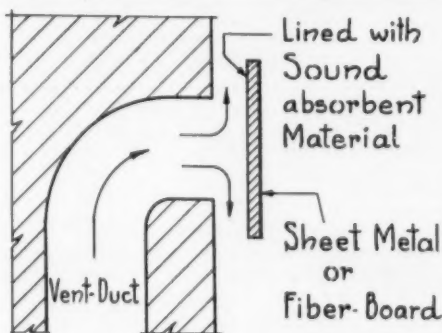


Fig. 2
Sound absorbent baffle over outlet grille of ventilating duct.

ligibly conduct classes because it is impossible for the students to understand him. In rooms of this type the difficulty is usually one of excessive reverberation. The introduction of sufficient sound-absorbing material upon the walls and ceiling reduces the time of reverberation to a value which makes intelligent speech possible.

Manual-training rooms, machine shops, and similar noisy rooms in school basements frequently create so much noise that instruction is difficult in the classrooms above them. It is difficult to build an additional suspended ceiling in such rooms because the head space is insufficient. If the amount of noise is not too great, the difficulty may be solved by absorbing material on the ceiling. This cannot be depended upon, however, to relieve an acute situation. In such cases, either the room must be moved, or the hours of use so arranged as to prevent conflict.

Dramatic rehearsals are often held in the school auditorium, and the director sits in the back of the room to test the speaking ability of the actors. The acoustical condition of any room, and especially a large one, is quite poor when empty and cannot be used as a criterion

as to the acoustical condition with an average audience present. The director, being unable to hear, due to the excessive reverberation, directs the players to speak louder, which lessens the intelligibility by increasing the reverberation. The difficulty in this instance may be due not to a lack of loudness but to the absence of an audience in the auditorium which increases the reverberation in the room. While it is advisable to have the performers accustomed to rehearsing under actual playing conditions, speaking to an empty house should not be considered an indication of the actual playing conditions.

In some instances, schools are located upon noisy streets so that the classrooms on such streets are subjected to the traffic noise of street cars, automobiles, and trucks. When the windows are kept closed, much of the noise is kept out, but during the late spring and early fall the open windows permit a great deal of the sound to enter. If the classroom has an adequate ventilating system, the windows should be kept closed at all times to keep out such noise. If it is necessary to open the windows for ventilation, window ventilator baffles should be constructed by placing an efficient sound-absorbing material on the window side of a deflecting baffle placed at a slight angle to the vertical on the inner sill (Fig. 3). The window should not be opened any higher than the ventilator, because the sound entering the room must be made to strike the absorbent material.

Determining Acoustical Excellence

The question sometimes asked is, How is it possible to definitely measure a room for acoustical excellence? The two uses of auditoriums are for speech and music. The efficiency of a room for speaking may be accurately determined because there is a certain definite transfer of thoughts from the speaker to the audi-

On or about January 1st—

Circle A Folding Partitions
 Circle A Rolling Partitions
 Circle A Sectional Partitions
 Circle A School Wardrobes
 Circle A Bleachers
 Circle A Portable Grandstands

will be manufactured and sold by —

NEWCASTLE PRODUCTS, INC.

NEWCASTLE,

INDIANA

ence. It is possible to measure the percentage of thoughts or images which the audience receives in proportion to those which the speaker creates. The transfer is by means of words and syllables,

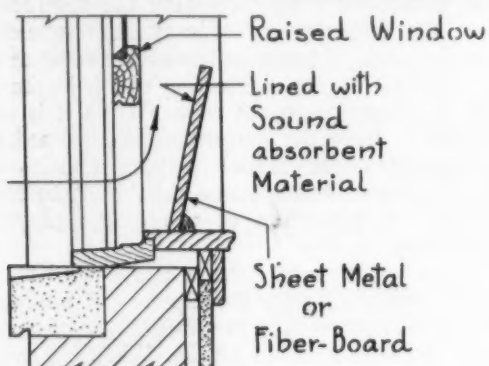


Fig. 3
 Sound absorbing window ventilator useful for cutting out traffic noises.

and these syllables are composed of certain speech sounds. Articulation tests may be made to determine what percentage of the speech sounds uttered by the speaker are accurately recorded by the audience. From this data the intelligibility, that is, the number of definite individual thoughts recorded, can be determined.

An articulation test is made by a speaker on the platform calling out a series of nonsense syllables, or monosyllabic words, containing all of the common speech sounds of English. Recorders in the audience put down what they think they have heard, and the percentage of the sounds clearly recorded are then tabulated. A typical intelligibility list showing vowels and consonants is shown in Figure 4.

It is thus possible to accurately determine the efficiency of a room as regards speech and the requirements necessary to give it the highest possible efficiency. In regard to music, however,

ARTICULATION TEST $VC^2 = 97 \times 94 \times 94 = 86\%$ Articulation Test Record

Date
 Title of Test.....
 Condition Tested.....
 Syllable Articulation.....
 Test No. 1
 List No. 13

Vowels

1. The first group is *bout, bit, bought*.
2. If you hear *back, bite, bake*, write it down.
3. I will now say *beck, book, bet*.
4. Write down *buck, boat, but*.
5. For the fifth group write.....

Consonants

6. Did you understand *why, tie, pie*?
 7. Please record *high, wig, wiz*.
 8. These syllables are *by, thy, guy*.
 9. *Whip, my, will, was* just spoken.
 10. Write the combination.....
 11. Please write the following.....
- (The above shows a portion of an articulation test record sheet with typical words used in vowel and consonant tests.)

Fig. 4
 Articulation test blank for measuring acoustical efficiency of room for speaking.

a different ideal is sought. The proper reception of music requires that the tones be properly blended and that the reverberation in the room be long enough to cause a slight overlapping of the individual notes. Where in speech, it is necessary to have the syllables clear and distinct, in music we do not want the notes to be clear and distinct, but they must run together very slightly. This means that the optimum reverberation time for music is slightly higher than for speech. What constitutes the ideal for music depends largely upon the taste and previous training of the individual. The opinions of musical authorities, however, usually agree rather closely and it is from such we take our standards. It is not always possible to please everyone in an audience because their individual musical taste may be different from the average. It should not be expected, therefore, that a room will be absolutely satisfactory for

both speech and music, and that everyone will be satisfied with the condition for music. In general, a "happy medium" is sought by modifying the requirements for effecting a satisfactory compromise.

It is important to have good acoustical conditions in schools because a large percentage of teaching is by word of mouth. We have gone to extreme measures and have clearly defined standards to provide the best possible conditions for visual instruction. Schoolrooms are properly lighted and reading type is carefully designed to reduce eyestrain. For the oral part of teaching, however, we have not gone to the same full measures. It has been estimated by the United States Office of Education that 42 per cent of the time spent by an entire group in grammar school was due to repetition or to a failure to pass grades. It is well to provide every possible physical advantage to facilitate learning, as the expenditure may be an economy through a lessening of the time the pupil spends in school, consequently reducing the cost of instruction.



Solo practice rooms should be acoustically treated if absorbent furnishing, as drapes, carpets, upholstered furniture, are not present.

FREE

FOR A LIMITED TIME

A NEW 90 PAGE BOOK
30 ILLUSTRATIONS

"MODERN FLOOR FINISHING"
BY F. N. VANDERWALKER
EDITOR OF PAINTING AGE

●
SEND FOR YOUR COPY TODAY

● This book gives invaluable information on floor finishing and maintenance problems. Shows you the most satisfactory and economical methods of caring for floors of every type.

● Some entirely new principles and methods are discussed, which offer greater

protection, longer life, new beauty to floors, with ease and economy of maintenance. Both the methods and materials used have been given the utmost rigorous tests under practical conditions.

● Every building manager, superintendent, engineer—any one vitally interested in floor problems—should be familiar with this book.

● This free offer is for a limited time only. (Regular price of book \$1.00). Cut out this coupon and clip to business card or letterhead.

● **S. C. JOHNSON & SON**, Floor Finishing & Main-

tenance Authorities, Racine, Wis. Dept. 511. Please send without obligation my free copy of F. N. Vanderwalker's 90-page

illustrated book "Modern Floor Finishing." Name _____

Address _____ City _____ State _____



A "Forward Wisconsin" Country School

During the past four years the rural schools of the State of Wisconsin have enjoyed an unusual type of service in connection with the planning and construction of new school buildings. The State Industrial Commission is responsible under the law for the approval of all plans of schoolhouses for rural and city school districts, except in communities of the first class. By means of a cooperative arrangement the Industrial Commission has worked through the office of the State Department of Public Instruction, and the practical work of passing on schoolhouse plans, as well as the consultation and advisory service, has been carried on by Mr. H. W. Schmidt, Director of Schoolhouse Planning.

As in the case of most states, Wisconsin has been unable to interest efficient and experienced school architects in the planning of small country schools. The State Department has, therefore, taken over this task, and under Mr. Schmidt's direction more than 400 one- and two-teacher rural schools have been planned and erected. It is interesting to note that the usual practice of the states in furnishing ready-made plans has been departed from, and Wisconsin school boards receive plans which are especially drawn to meet each situation. By means of an elaborate questionnaire and by

visits the actual situation in each district is studied, and the plans which are prepared take into account the financial ability and the educational program of the district, the possibilities for social-center use of buildings, etc. Of all the buildings erected during the past four years, not more than four have been constructed from duplicate sets of plans. All the other buildings are original designs.

The State Department has naturally standardized certain elements of schoolhouse planning, but the general layout of each building, the arrangement of parts, the heating, ventilation, as well as the exterior design have been modified and improved in each case so far as the local situation has warranted.

The new DeRemer School in School District No. 10, near Raymond, Wisconsin, is distinctly out of the ordinary as a one-room country school. The territory which it serves will not allow readily of centralization of the district schools so that this building will probably be required for many years to come. So far as the local finances have permitted, the design departs from the absolute simplicity of the old type of district school. The foundation and the basement are of concrete and the superstructure is of brick-veneer construction. A high-grade tan wire-cut brick has been used, and the ex-



THE DEREMER SCHOOL, SCHOOL DISTRICT NO. 10, RAYMOND, WISCONSIN

posed woodwork has been stained to harmonize with it. The interior is finished in a substantial manner. The basement playroom has a heavy matched fir floor and plastered walls and ceilings. The classroom and the smaller service rooms are plastered through and are finished rooms are plastered throughout and are finished ceilings are plastered.

Heating and fresh air are provided by means of an approved type of heating and ventilating furnace. The toilets are of the newer septic type. The building is wired for electric lighting and is equipped with approved standard lighting fixtures. The general arrangement is such that the basement may be used for community activities and as a playroom on cold rainy days. The first floor is arranged so that every space can be controlled by the teacher from her desk. The library is ample for a pupils' working collection of books and magazines.

The building was erected early in the year of 1931 and cost, with furniture and furnishing, approximately \$6,000.

PASSING OF DR. BICKETT

Dr. William J. Bickett, for the past eleven years superintendent of schools of Trenton, N. J., died November 18 at a local hospital, at the age of 52.

Dr. Bickett, who was born in Parkesburg, Pa., was a graduate of the West Chester Normal School and Grove City College, and had completed several graduate courses at Columbia University. An educator since the age of 20, he had served as teacher, principal, and superintendent in a number of school systems in New Jersey. He was superintendent of the Rahway schools for ten years, and of the Bernardsville schools for four years. He became superintendent of schools in Trenton in September, 1920, when he succeeded Z. E. Scott.

PASSING OF DR. LEONARD OF NEW ROCHELLE

Dr. Albert Leonard, who had been superintendent of schools of New Rochelle, N. Y., for twenty-five years until his resignation on November 21, died at his home on December 5, after a serious illness of two months. Dr. Leonard would have been 73 years old on December 21.

Dr. Leonard, who was a native of Ohio, held four degrees from Ohio University, receiving the first in 1888, and the last forty years later. Following his graduation from college at the age of 31, he began his lifework as a high-school principal at Dunkirk, N. Y. After four years there, he went to Binghamton. He was dean of the College of Liberal Arts and professor of pedagogy at Syracuse University from 1897 to 1900.

The school board, in adopting resolutions accepting Dr. Leonard's retirement in November, paid high tribute to his long period of service, to his ability, his sterling character, and his contributions to the local school system and the community. As a further mark of respect, the board voted to name a new large school the Albert Leonard Junior High School.

♦ Millville, N. J. The board of education has changed the location of the administrative offices of the school system from the high school to the Sensor Building. The new location is more centrally located and is accessible to those who have business to transact with the schools. The change releases space in the high school for classroom purposes, which relieves the congestion in the building.



THE DEREMER SCHOOL, SCHOOL DISTRICT NO. 10, RAYMOND, WISCONSIN
Designed by the Wisconsin State Department of Public Instruction



THE DEREMER SCHOOL, SCHOOL DISTRICT NO. 10, RAYMOND, WISCONSIN

SAFETY

has been built

INTO THE FORD SCHOOL BUS



Here are two Ford School Busses that serve the Germantown-Clermont Central School, Germantown, N. Y.

THE Ford School Bus has many standard safety features which make it an excellent vehicle for the transportation of children. The body is of sturdy all-steel construction with every window and the windshield of safety glass. It is mounted on the standard Ford 1½-ton chassis which has proved itself so strong and reliable in the many businesses where Ford trucks do the hauling.

Careful provision also has been made for the comfort and health of the occupants of the Ford bus. Six of the fifteen windows are of the regulating type, thus assuring good ventilation. The exhaust

pipe extends the full length of the body and carries the fumes off at the rear. The three doors make loading and unloading quick and easy. The long wheelbase of the truck (157 inches) permits a seating arrangement which furnishes ample room for thirty-two children and a driver.

Safe, reliable and economical to own and to operate, school districts, in the heavily populated areas as well as in the rural sections, will find the Ford School Bus a sound investment. The Ford dealer in your locality will be pleased to give you a demonstration of this unit.



Most PRACTICAL for Your School

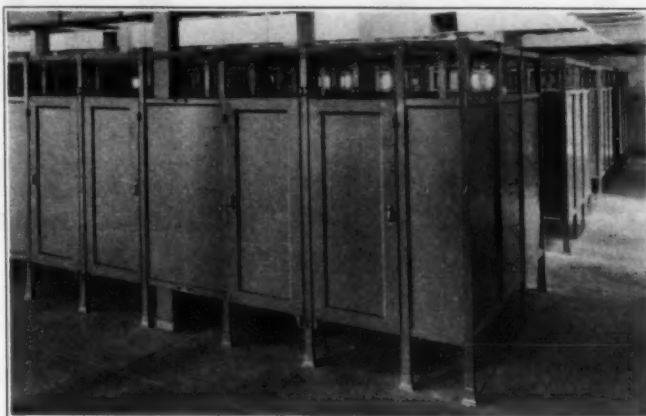
Your school may be large or small, new or old. Several hundred toilet partitions or only a few may be required. You will find FERROMETAL Partitions most practical in all ways.

Sanitation. FERROMETAL Partitions have no places for germs and dirt to hide and spread. Flat surfaces make washing quick and easy.

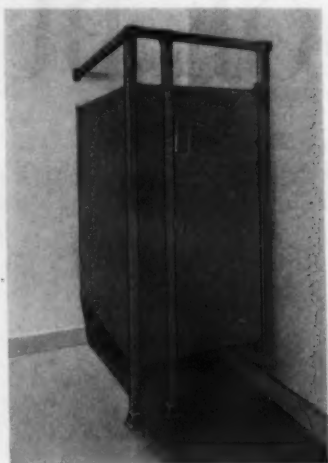
Service. FERROMETAL Partitions are built from 16 gauge Keystone (rust resisting) copper bearing steel—to withstand steady use year after year.

Safety. FERROMETAL Partitions are designed to prevent the catching of fingers and tearing of clothing.

Cost. FERROMETAL Partitions provide cleaner, finer toilet room facilities at the lowest possible cost.



Panel and Flush Types
in Steel and Aluminum



FLUSH TYPE



PANEL TYPE

FERROMETAL Partitions come in Panel and Flush types—with rigid, non-vibrating, sound proof construction.

Whether or not your plans are immediate—write for FERROMETAL literature. You'll find it worth keeping for reference—it will help you arrange toilet room space to best advantage—and will be gladly sent for the request.

MILWAUKEE STAMPING CO., MILWAUKEE, WIS.

FERROMETAL

METAL COMPARTMENTS

* For toilet partitions, dressing room compartments, storage rooms, janitor's closets, utility corridors.

SUCCESSFUL USE PROVES SCHOOL-BUILDING VALUE

(Concluded from Page 54)

The heating plant is housed in a separate building some 75 ft. from the main building, connected with a concrete tunnel. The heating system is a vacuum system and duplex vacuum pumps. Two low-pressure boilers are used for the heating of the building with one 100-pound high-pressure boiler for the kitchen, showers, and future pool.

The totals of the completed contracts were as follows:

General	\$270,656
Plumbing and Heating	73,755
Electrical	9,313
Total	\$353,724

The total cubage is 1,600,000 cu. ft., making the cost per cubic foot 22.1 cents. As the building accommodates 800 pupils, the per-pupil cost is \$442. An auditorium with a capacity of 1,212 is, of course, unusually large for a school of this size and raises the per-pupil cost. These figures compare favorably with the cost figures of other buildings of comparable construction erected in this section during the period.

Some Suggested Modifications

At the time of the construction of the building, both the administration and the board favored terrazzo as against battleship linoleum for corridor floors, largely because of the belief that terrazzo was more resistive to wear. A close examination of the terrazzo corridor floors and the linoleum floors of the principal's office in the fifth year of service, does not indicate superior durability on the part of terrazzo, to the extent of compensating for the greater noise developed by corridor traffic.

At the time of construction, the placing of the cafeteria under the auditorium was appreciated as being theoretically unsound, but its

location there was dictated by financial conditions. While we have experienced no difficulty due to the spread of odors, we have noticed the lack of adequate sunlight. While there is the compensation of more comfortable temperatures during the heated season, we would not recommend the locating of a cafeteria in the basement unless necessitated, as in this case, by financial reasons.

While the relative locations of the checkroom and the ticket office in the auditorium lobby is of minor importance we believe that on the whole, more satisfactory results would be obtained if these rooms were reversed.

We put a terrazzo floor in the faculty office. Either battleship linoleum or hardwood, would represent a distinct improvement.

The placing of a building over a mile from the business district affects the receipts from extracurricular activities rather adversely, although there is no question that it makes for a more satisfactory academic program.

Some Points of Excellence

The experience of four years has been, on the whole, exceptionally satisfactory and has emphasized a number of points of excellence especially in the direction of utility and adaptability.

The building, as designed, permits the use of the auditorium for civic purposes, without any interruption whatsoever of the school program. We have found it a matter of great convenience to be able to use the auditorium or gymnasium for extracurricular activities without allowing spectators access to the rest of the building. The provision for a faculty office relieves congestion in the principal's office, and makes classrooms available for continuous service. We are able to use the domestic-science unit as a cooking and dining room during the first semester, and as a sewing and fitting room during the second semester, without affecting the

work adversely, thus avoiding the extravagance of unused space.

The provision for heating any room independently of the rest of the building has proved a great convenience at various times.

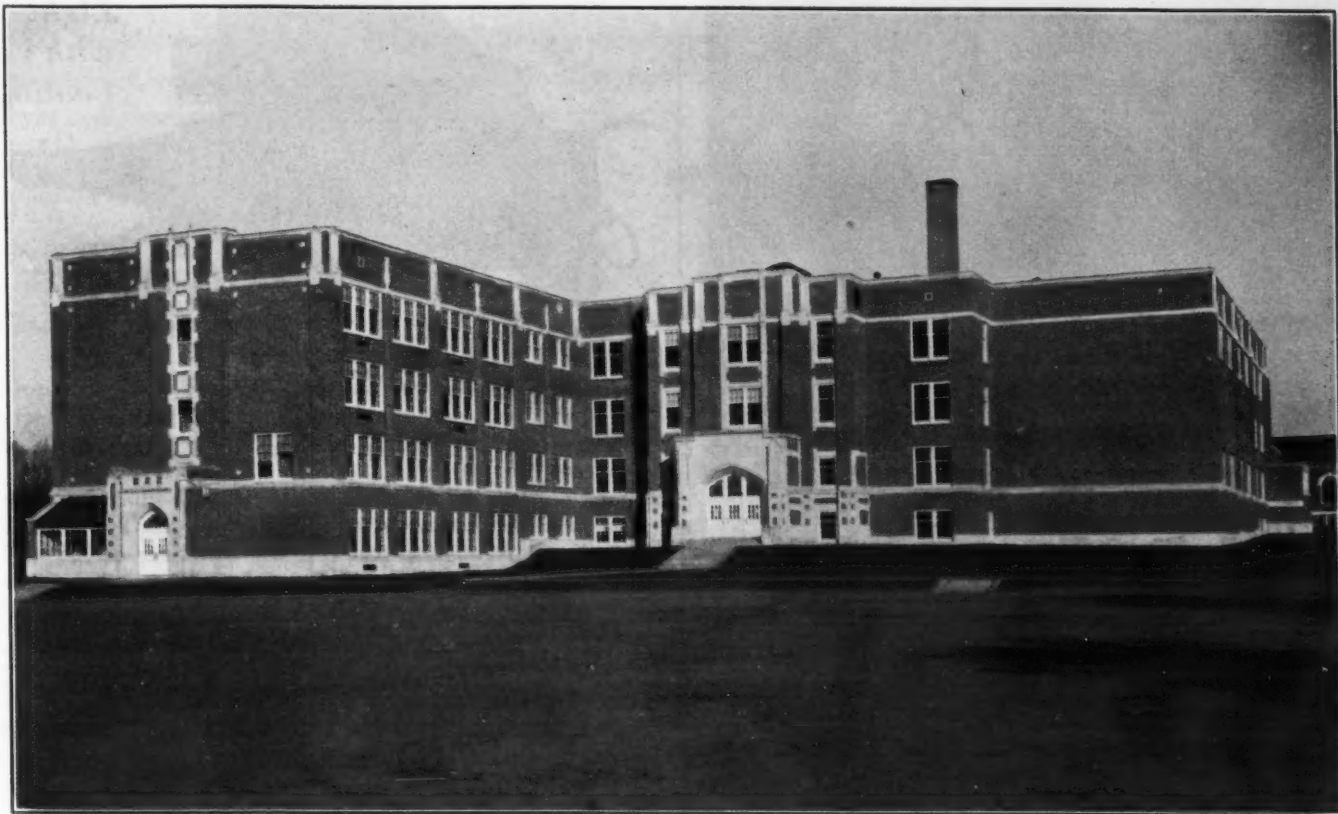
We are pleased with the arrangement of the students' laboratory desks, enabling all students to face the instructor's desk for the following reasons: (1) Such construction makes for a closer association of lecture and laboratory work. (2) The instructor can temporarily halt the progress of a laboratory period to give special attention to any difficulty that may arise. (3) A greater number of pupils can be accommodated in this way than with the traditional type of desk. (4) The availability of the laboratories for recitation rooms makes for economy in building operation.

The administration's experience in this project has justified the claim of the educational consultant to a "place in the sun," particularly in the smaller cities that do not include building specialists on their staff. While in Iowa, the State University makes no charge in this connection, we feel that in those states where this service is not available, the standard fee of a competent educational engineer represents a profitable investment from the standpoint of the district.

ADMINISTRATION

♦ The schools of Tracy, Calif., have for the past two years enjoyed the benefits of a public-address system. The system, which was devised and installed with the aid of the physics instructor, has been eminently successful in operation. It has been used on the football field to announce games, in the gymnasium for noon dancing, and in the school building for broadcasting radio programs. The device has been constructed according to modern engineering standards and the final cost was approximately one third of a similar system purchased in the commercial field.

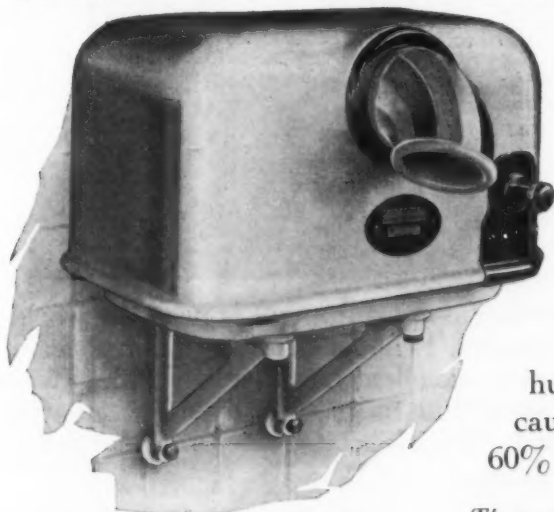
In the newest Minneapolis Schools



*Fowell Junior High School, 28th South and 36th Streets, Minneapolis. Architect: Minneapolis Board of Education Architectural Department
Business Supt., George Womrath, Minneapolis Schools.*

the new "SF" SANI-DRI will provide modern electric drying service in the washrooms of the Fowell and Ramsey Junior High Schools

TWO FINE new schools, both Junior Highs, will soon be added to the list of splendid structures now serving the city of Minneapolis. Of these new schools one, the Fowell, is completed; the other, the Ramsey, is under construction. Both of these new buildings are of extreme interest as reflections of studied planning.



New "SF" Wall Model SANI-DRI with push-button control and automatic cut-off, as installed in the new Minneapolis Junior High Schools referred to above.

It is interesting to note that all of the washrooms in these new buildings will be equipped with organized drying service—a drying service that will be ready for continuous use from the day these schools are opened and that will give many, many years of low-cost, trouble free drying. The new "SF" SANI-DRI was selected to serve the pupils of these new schools because of its demonstrated efficiency in hundreds upon hundreds of similar installations, and because of its proved economy — savings running as high as 60% to 90% of old-fashioned towel costs.

The many advantages of the new "SF" SANI-DRI are interestingly set forth in our booklet, "The Airway to Efficiency," a copy of which you should have. Why not write for it today?

Electrical Division

CHICAGO HARDWARE FOUNDRY COMPANY

North Chicago, Illinois



Clash-Bang-Zing

The Kindergarten "Symphony" cuts loose

No wonder schools need J-M Sound Control Treatment

NOWHERE is quiet so essential as in a school. Yet nowhere do so many diverse activities create distracting and disturbing noise. When you realize that the noise in an average classroom reduces every student's hearing to 60% of normal, the need for eliminating unnecessary noise becomes apparent.

Noise confuses the brain—impairs accuracy—and dulls the senses. Don't allow noise to handicap the students under your care . . . save your teachers from the nerve strain and mental fatigue of working against detrimental and easily remedied sound conditions.

Noise in disturbing volume need no longer be tolerated in a school. Johns-Manville Acoustical Engineers—pioneers in developing methods of sound control—can eliminate this evil of noise in schoolrooms and corridors.

*Stimulates clear thinking—
reduces fatigue*

They have developed methods and materials which absorb noise to an extraordinary degree. New schools everywhere are applying Johns-Manville Sound Control Treatment. It can be applied at reasonable cost to modernize your present school building.

J-M Sound Control is a modern aid to education that every school official should investigate. Just ask our nearest office to arrange for a visit by our Sound Control Expert or write Johns-Manville, 292 Madison Ave., N. Y. C.

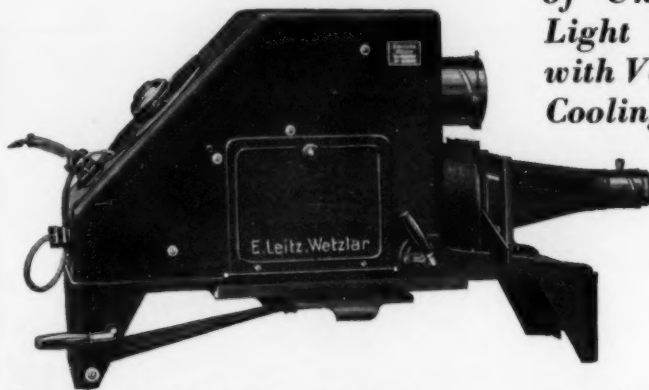


QUIET—and a distinctive ceiling as well. J-M Sanaoustic Tile provided both in this cafeteria in the Evanston Township High School, Evanston, Illinois. Hamilton, Fellows & Nedved, Architects, Chicago, Ill.

Johns-Manville Sound Control Treatment

LEITZ COMBINATION PROJECTOR "VH"

*of Unequaled
Light Intensity
with Ventilator-
Cooling System*



The four parabolic mirrors which act as concentration medium for the light rays, lend the Projector "Vh" a most effective mode of light concentration resulting in an exceedingly brilliant and white image at the screen. The four mirrors cast the light upon the opaque object in an evenly distributed manner, eliminating the possibility of shadows with uneven objects. The ventilator-cooling-system continuously blows cool air upon the object and thus specimens can be handled conveniently and injury to them through overheating is eliminated. The projection objectives are of utmost correction, giving crisp and clear-cut images.

SEE OUR EXHIBIT AT THE CONVENTION OF THE NATIONAL EDUCATION ASSOCIATION, WASHINGTON AUDITORIUM, WASHINGTON, D. C., FEB. 20-25.

Write for Pamphlet No. 1177 (37)

E. LEITZ, INC.

60 East Tenth St.,

Washington, D. C.

San Francisco, Calif.

BRANCHES:

New York, N. Y.

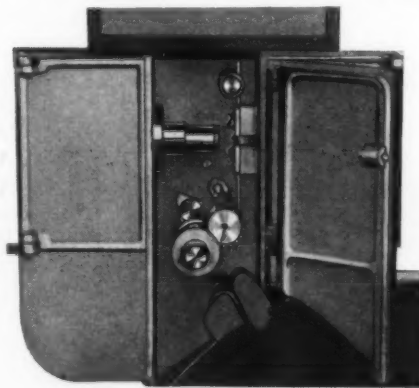
Chicago, Ill.

Los Angeles, Calif.

Sound Picture Equipment Priced within your Budget

*Clear full
tones.*

*Latest im-
provements
in sound
engineering*



*Complete
A.C.
operated.
Uses no
batteries*

Mellaphone Equipment is used the world over in theatres, Schools, and institutions with consistently excellent results. Simple; accurate, and clear full tones. Easily adjusted with the utmost precision, trouble-proof, quiet,—uses no chains.

Two Sound Heads, one Mellaphone All-Electric Theatric Amplifier and Stage Speaker now completes a sound installation equal to the best. Standard full-sized equipment that will deliver the utmost in sound expectations. Lens and electrical units are the best obtainable.

Write for full information.
Music Reproduction and Public Address Systems.

MELLAPHONE CORPORATION
ROCHESTER, NEW YORK

Your Problem Solved

Have you been wondering how you were going to properly provide for all of the courses necessary to enable your students to compete with those from larger schools, while you are handicapped by lack of room?

The Sheldon combination multi-service tables in almost every branch of school work will solve that problem for you. The 1931 progress of Sheldon Furniture design, construction, and material opens many possibilities for teaching advantages, economy of space and investment, and durable, beautiful, successful equipment never before available.

Write us, tell us your problem, receive our new beautiful catalog of 700 illustrations, 1,500 designs, and many pages of detailed information covering your problem.

Sheldon Furniture for:

Chemistry	Cooking	General Shop	Bookkeeping
Physics	Lunch Room	Art	Class Room
Biology	Sewing	Drawing	Library
Cases	Woodworking	General Science	Typing

No. 80130 Combination Typing and Bookkeeping Desk

A desk automatically enclosing the typewriter, providing the storage particular to school needs, and specially constructed to allow for bookkeeping work. A combination of features not found in any other one desk.



E. H. SHELDON & CO., Muskegon, Mich.

BUILDING A SCHOOL TO FIT A COMMUNITY

(Concluded from Page 59)

The Ground-floor Plan

All departments on this floor are of ample size, with no crowding of any department. It contains well-arranged and complete shops for the courses offered, with various supply, stock, finishing, and toolrooms. The shop department has been located under the gymnasium, so that the noise will not interfere with the other work going on in the classrooms.

The sewing room has been arranged with a folding partition so that a part of the room can be used for lectures. Ample fitting and storage rooms are provided.

In the domestic-science room there are separate units, each containing a stove, sink, and cabinet. There is a model housekeeping room, which may be used for a living, dining, or other room as desired, and the necessary storage and supply rooms.

The cafeteria, kitchen, and service room are adjacent to the domestic-science room on one side of the lunchroom. The lunchroom is located centrally for both the junior- and senior-high-school students.

A mechanical-drawing room is located adjacent to three classrooms used by the industrial classes and the high school. Free-hand drawing is located in a well-lighted spacious room, with an instructor's room, a supply room, a preparation room, etc.

In addition to the foregoing there are junior-high-school classrooms, toilets, a janitor's room, and the switchboard room and storage space.

The First Floor

The first floor contains the junior-high-school classrooms. The old high-school building forms the east wing of the building. Directly opposite and forming the west wing, is the gymnasium, with its special entrance for the public. The

floor is 54 by 81 ft. in size. On opposite sides are located the girls' and boys' locker, shower, and instructors' rooms, and the apparatus room. Directly above these are the bleachers.

In the rear of the gymnasium there is an auditorium seating 800 persons. The floor is pitched and the front seats have folding tablet-arm chairs. The stage is equipped for dramatics, and there is an orchestra pit, and a motion-picture booth. The interior of the auditorium and its lobby is in early Georgian style, with terrazzo floor and marble wainscot, which present an attractive appearance.

Directly opposite the offices, which are between the central entrances, is the bookkeeping room, and beyond this are the model office, the typewriting and stenography rooms. The typewriting room has acoustic plaster on the walls and ceiling. The remainder of the wing is devoted to three high-school classrooms, toilets for boys and girls, and storage rooms.

The Second Floor

The junior-high-school classes are located in the east wing of this floor, while the front of the west wing contains the upper part of the gymnasium and the bleachers.

In the rear of the gymnasium is located the upper part of the auditorium, which contains the balcony, the lobby, and the main stairs to the auditorium entrance. In the central building, directly above the offices, is located a large library and a study room. In the rear of the west wing are the laboratories which are fully equipped with special cases, a conservatory, etc.

The additional rooms on this floor are devoted to three high-school classrooms, toilets, teachers' rooms, and storage rooms.

THE CHICAGO SCHOOL SITUATION

During the past month many things have happened in the Chicago school field, but the most needed thing has not happened. The financial muddle has not been

cleared up. The money with which to pay teachers and run the schools has not materialized. Since April last, the teachers have received one month's pay in actual money. The rest of the time they have been paid in scrip.

The relief which is sought at the hands of the state legislature was not secured at the time this article was written. One of the legislative measures provides for the purchase by the state of \$25,000,000 educational-fund warrants. The financial question, as far as it concerns the schools of Chicago, is involved in a tax adjustment which concerns the municipality as a whole. This means that the legislature must solve the Chicago tax problem and must place the city, including the schools, upon a solvent basis.

Talk of Closing Schools

The most serious phase which has entered into the situation is the suggestion made by Mrs. W. S. Hefner, a member of the board of education, that the schools be closed and that the responsibility of reopening them be thrown upon the state.

The suggestion is opposed by President Lewis E. Myers, who says: "I believe it would be a terrible thing to turn 200,000 school children out on to the streets at this time of the year."

"I think, too, that closing the schools, even temporarily, would be a disastrous step as far as the teachers are concerned. They certainly would not gain anything. Even under the sorry conditions under which they are compelled to work now, they at least have their pay coming to them."

"The psychological aspect of compelling them to stay at home and naturally, worry all day over their financial difficulties would certainly add greatly to the mental burden which we hope the legislature will lift, and that right speedily."

"The board of education hopes that definite and permanent relief will be given by the legislators. The revolving fund, which the school board's proposed relief legislation advocates, affords the only relief bill before the legislators that does not propose an increase in taxes."

Shortening School Term

Another plan under consideration by the board of education, whereby the budget for 1932 may be cut, contemplates the shortening of the school term. Faced with cold figures indicating that the school budget of \$87,925,464 is \$12,440,695 in excess of what could be expected from the taxpayers during the coming year, several trustees at the board meeting yesterday afternoon declared themselves in favor of shortening the school term.

School Ventilation: Principles and Practices¹

The Final Word of the New York Commission on Ventilation

Discussed by J. M. Robb, C.E., Peoria, Illinois

The New York Commission on Ventilation has sung its swan song, and in so doing has issued a final document which contains much material for thought and some conclusions which are at best distinctly debatable. As in the past, the Commission leans strongly to window ventilation. It tacitly admits, however, that the most important underlying considerations of satisfactory air conditions in ventilation for human well-being are as yet unknown. The document summarizes the history of the Commission's investigations during the first period of its history from 1913 to 1923, and outlines in greater detail its findings during the final phase of its work from 1926 to 1929.

The dust jacket of the book contains this remarkable statement: "Elaborate systems of school ventilation which are costly and a menace to health, involve needless expenditures of upward of \$2,500,000 a year. The New York Commission, in its final report, demolishes outworn theories on heating and ventilation and makes definite recommendations for revised building legislation." The spirit of this statement is not reflected in the book proper, even though the estimate of waste is credited to the indefatigable chairman of the Commission, Dr. C. E. A. Winslow, who has been the real leader in the studies.

Summary of Conclusions

The general conclusions of the study may be best understood from the words of the Commission itself:

"1. *The Major Objective of Schoolroom Ventilation* is the provision of such atmospheric conditions as will facilitate the elimination of heat from the body surface without the production of objectionable drafts. In practice, this means the maintenance of a room temperature of 68 to 70 deg. F., with moderate air movement. Under such conditions, special control of humidity is not essential, except perhaps in certain northern regions where humidity is exceedingly low in cold weather. A minor objective should be the provision of sufficient air change to avoid unpleasant body odors.

"2. *The avoidance of overheating is of primary and fundamental importance* for the promotion of comfort and efficiency and the maintenance of resistance to disease.

"3. *Desirable conditions may be obtained* by at least three methods of ventilation when proper design and operation is provided: (a) by plenum ventilation; (b) by local unit ventilation; (c) by window-gravity ventilation. For the average school, favorably located, window-gravity ventilation seems to be the method of choice on grounds of comfort and economy.

"4. *Physiological effects of radiation and convection of heat*, vertical variation in temperature, and of electrical and other properties of the atmosphere, are greatly to be desired.

"5. The present laws and regulations requiring a supply of 30 cu. ft. of air per pupil per minute in the schoolroom have no justification in theory; and, in practice, may involve a serious handicap to progress in the art of school ventilation.

"6. Such regulations should be replaced by laws outlining the major objectives of schoolroom ventilation and delegating to some small, expert, official body the power to determine whether specific plans for school ventilation are adequate to attain those objectives."

Suggested Regulations for Ventilation

A standard outline for the state regulation of ventilation is provided by the Commission in

the following form, which is apparently being brought to the attention of state and local school officials. The outline is as follows:

General Provisions

1. After the passage of this act (adoption of this regulation) no school building shall be constructed, reconstructed, or enlarged until plans and specifications for such construction, reconstruction, or enlargement shall have been approved by (the legally constituted authority) and a certificate of such approval shall have been received by the local board of education, school trustees, or other body within whose jurisdiction the school is (or will be) located.

All plans shall show and specifications shall fully describe the system of heating and ventilation it is proposed to install. Such heating and ventilating systems shall conform to the standards hereinafter provided.

Heating and Ventilation

1. Every school building hereafter constructed, reconstructed, or enlarged shall be provided with a heating system of sufficient capacity to heat all parts of the building during the coldest weather, when adequately ventilated according to the following schedule:

- a) Corridors, gymnasiums, and shops, 65 deg. F.
- b) Swimming pools, and adjacent dressing rooms, 75 deg. F.
- c) All other occupied rooms, 68 deg. F.

Source of direct radiation shall be so designed or protected as to prevent overheating of persons in seats adjacent thereto.

2. All classrooms shall have at least 15 sq. ft. of floor space and 200 cu. ft. of air space per pupil and (including cloakrooms) shall be provided with a system of heating and ventilation including means of air supply and exhaust capable of avoiding unpleasant odors (such as are likely to accompany an increase of the carbon-dioxide content of the air above 15 parts per 10,000) and of avoiding, without producing chilling drafts, an increase of room temperature above 68 deg. F.

Such ventilation shall be accomplished (a) by mechanical means, or (b) by the window-gravity method (in rooms having 100 occupants or less), or (c) by any other method which will attain the results specified above.

Special provision (preferably by mechanical means) shall be made for the ventilation of auditoriums, chemical laboratories, shops, cafeterias, and toilet rooms located in the building.*

Auditoriums	20	to 30 cu. ft. of air per minute per seat.
Chemical laboratories general ventilation	2	cu. ft. of air per minute per sq. ft. of floor area and separate ventilation for chemical hoods to the extent of four changes of the cabinet each minute.
Other laboratories	1	to 12 cu. ft. of air per minute per sq. ft. of floor area.
Shops, cafeterias, assembly rooms, gymnasiums, picture machine booths, dining rooms	1	to 12 cu. ft. of air per minute per sq. ft. of floor area.
Kitchens, toilets, ward- robes, and lockers	2	cu. ft. of air per minute per sq. ft. of floor area.

3. Every schoolroom used for instruction, study, assembly, and physical recreation shall be provided with at least one thermometer of a grade that will give a reading accurate to within 1 deg. F. The thermometer should be so located as to give a representative reading of the temperature at the breathing line of the pupils.

*A reasonable standard of ventilation which might well be applied to special rooms in a school building has been suggested by one member of the Commission. It represents, with slight modifications, the standards of the Guide of the American Society of Heating and Ventilating Engineers.

4. Such an approved system of ventilation shall be maintained in operation whenever school is in session.

In the second section of the foregoing form the cubic content of schoolrooms is specified as 200 cu. ft. of air space per pupil, without an explanation for the change from 250 cu. ft. per second-grade child, and 310 cu. ft. per sixth-grade child, originally recommended by the Commission, and repeated in the specifications for window-gravity ventilation on page 20.

Upon another point the views of the Commission have receded from the former position. Page 48 carries this significant statement: "Our earlier view that *window-gravity ventilation is definitely superior to plenum ventilation from the standpoint of liability to respiratory infections* must apparently be abandoned in spite of confirmatory evidence obtained in New Haven and Chicago."

The Commission has apparently not found additional evidence to support its continued claim for the superior economy of window ventilation. The entire claim in this final report is contained in a calculation on pages 50 and 52, showing the cost to warm 30 cu. ft. of air from 30 to 65 deg., as 20 cents per child per school year. The conclusion is that "if only one half of the two million school children of New York state are in fan-ventilated rooms, there is a direct waste of \$200,000 a year, in money burned up and poured into the circumambient atmosphere."

The Man Behind the Report

Intelligent consideration of this report must be based upon an appreciation of the spirit of the man who with magnificent pertinacity handled the Commission's activities during eighteen years. It required heroic effort to harmonize the differences which must have naturally and inevitably occurred among the high-powered members of the chairman's own group, to say nothing of the personal resistance required to prevent the destruction of the work by the enormous pressure of outside opposition. To carry on this work for these many years as an incident to regular employment in important work in other fields is an accomplishment that deserves more recognition than it will ever receive.

The fable of the chap who passed through a forest without seeing the trees has a universal application to all human beings. And, the more a scientist may be in some particular field, the more likely is his feeling to mislead him when he wanders outside of it, without this being any reflection on his integrity or sincerity. There appears to be ample warrant for the belief that the report of the New York Commission on Ventilation expresses more of its chairman's opinion than it does of facts.

When the question is asked how the Commission might have proceeded in some other direction to solve the problem in the light of all the knowledge available eighteen years ago and even available today, harsh criticism of the findings are not readily possible.

The Fundamental Problems Still Unsolved

The fourth conclusion of the report makes clear that the most important considerations in ventilation are as unknown as was the influence of vitamins in food a few years ago. In fact, it may be said within the strict limits of accuracy that our knowledge of ventilation is now in the state as was our knowledge of water supply before Pasteur discovered bacteriology.

If the air supply of a schoolroom is considered on the basis of the air supply of a submerged submarine, it becomes easily obvious that the chemical characteristics of the maintained atmosphere are at least as important as are the physical. It is quite clear that, as the Commission declares, studies are necessary to determine the physiological effects of radiation

¹Cloth, 12mo., 73 pages, price, \$1. The Bureau of Publications, Teachers College, Columbia University, New York.



IF CHILDREN FIGHT FOR CERTAIN SEATS

TEST FOR *Twilight Zones*^{*}



THERE is always a reason why certain seats are the most popular—and that reason is usually *light*. No child can do his best unless he can see his best. Instinctively, he seeks the most comfortable spot for his eyes.

So look to your lighting if you want to reduce the number of "*backward children*" in your school; if you want to cut down the "*trouble-makers*"; if you want to protect those sensitive young eyes from unnecessary injury.

Make this simple test

Take a phone book and go to the seat of some bright-looking child who seems "*backward*" or a "*trouble-maker*". Now, sit down and open

the phone book at random and note what happens. Does every word stand out clear, sharp? Can you read any phone number, name and address rapidly and with perfect ease? If you can't—if you have to squint, slow up or draw the book closer to your face—this child is not getting enough light to do his best work. The *Twilight Zone*^{*} in which he is forced to sit is endangering his eyes, choking his interest in his studies, and twisting his unhappy thoughts into a hundred ways of "*deviling*" the other children.

This simple test which we recommend you make yourself is not an absolutely accurate one (only a lighting engineer can make such

a test) but it is quick and accurate enough to give you some idea of the lighting conditions in your school. So, make the phone book test today. Rid yourself of *Twilight Zones*^{*}. Place illumination in your school on a scientific basis.

Lighting specialists of the Westinghouse organization or your local light and power company are always ready to inspect your school and submit recommendations based upon the exact conditions observed.

Send for free bulletins

Write the Commercial Engineering Department, Bureau 70, Westinghouse Lamp Company, 150 Broadway, New York City, and we shall be glad to send you free bulletins explaining correct types of illumination for your school.



★ **TWILIGHT ZONES**
The deceptive half-light between obvious darkness and adequate illumination.

Westinghouse Mazda Lamps



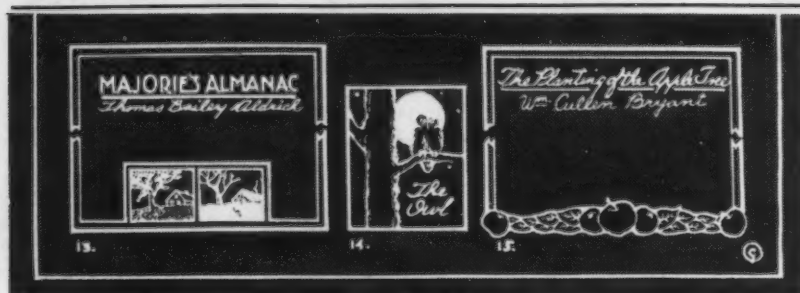
Pleasing Blackboard Headings for Literature and Memory Work

Resourceful teachers will find many suggestions for treatment of story telling headings in the accompanying illustration. In literature and memory work these little drawings not only serve to hold the child's attention, but make the story recital more vivid and interesting.

The examples illustrated are simple and easy to draw, and do not require any unusual artistic talent. Of course, easy parts of the story should be chosen for picturizing.

Although An-Du-Septic Dustless Crayon is suggested as the medium for developing these blackboard drawings, colored chalks should also be employed whenever possible.

AN-DU-SEPTIC DUSTLESS CRAYON



BINNEY & SMITH CO., 41 East 42nd Street, New York

Makers of

GOLD MEDAL PRODUCTS

Crayola Drawing Crayon
Perma Pressed Crayon
An-Du-Septic Dustless Crayon
Anti-Dust Blackboard Crayon

Atlantic White Chalk Crayon
B & S Colored Chalk Crayon
Artista Water Colors
Artista Poster Show Card Colors

(Continued from Page 94)

or convection of heat, of variations in temperature, and of electrical and other properties of the atmosphere.

The Fallacy of Economy in Window Ventilation

The claimed economy of window-gravity ventilation is a matter which is tangible and readily within the possibility of logical discussion. A thermometer placed in the ceiling outlets of a classroom will show that the temperature of the escaping air is very much higher than the temperature at the breathing line. Comparatively simple calculations will show that the heat loss due to the removal of the heated air at the ceiling exceeds what is required to warm double the volume of air to the exact temperature indicated at the breathing line.

Window-gravity ventilation proposes an outlet to the roof from the classroom wall opposite the windows. This outlet is to be at least 4 sq. ft. in size (the original recommendations were for 8 sq. ft.). Such a mass of radiation is to be provided on the outside wall beneath the windows, that the heat outflow from the ceiling opening will be replaced rapidly enough to maintain the desired room temperature. Such an arrangement may be low in first cost, but it will be distinctly expensive in operation.

When practical school administrators understand what window ventilation proposes on the basis of economy, they will not so readily accept a low first cost in lieu of a higher operating expense. They will rather recognize that unit ventilators, properly applied with corridor venting and provisions for reduced air flow in cold weather, are at least as economical as the window gravity method and that this mechanical method has distinct advantages for certainty and economy of operation. This statement is

fully warranted by the studies of such authorities as W. R. McCornack, architectural consultant of the Rosenwald Fund.

Some Omissions

The report contains several significant omissions:

1. There is no mention of the influence of dust on ventilating results. Numerous observers have noticed that ventilation of a school building which is kept spotlessly clean is relatively easier and far more effective than it is in one which is carelessly cleaned.

2. Economies of improved ventilating and design have not been taken into account. Some of these economies have been shown by recent improvements in corridor ventilation and by proper unit ventilator design. This is especially notable in the case of systems which practically cut off the outside intake of air in very cold weather.

3. The report makes no mention of the necessity for training school custodians so that ventilating equipment is handled with the skill which it requires. Numerous school organizations are recognizing that the ability of the janitor-engineer to operate the mechanical plant affects ventilating results at least as much as anything in the design and installation of the equipment.

4. The report does not consider, and perhaps the point is outside its scope of work, that the teacher has a responsibility in obtaining proper ventilating results. If teachers were trained as they are in Rochester, N. Y., to observe ventilating and heat conditions, a good deal of the overheating with the window-gravity method would be avoided and no small cost of operation might be saved.

Changes in Ventilation Regulations

The Commission makes a valuable contribution when it declares that the present laws and

regulations on ventilation are antiquated and require modification and simplification. Most of the state laws on school ventilation are as ineffective for present-day schools as would be the old regulations for horse transportation if these were applied to control modern automobile traffic. The question here arises: If the state officials whose responsibility it is to enforce school-building regulations are not competent to decide what should be permitted or what should be required, what hope is there that better advice can be had from a small, expert, official body?

The final three conclusions of the report offer a basis for mutual agreement upon which all parties concerned can readily agree.

NEW BOOKS

Examining the Examination in English

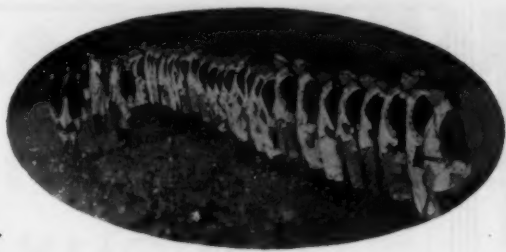
A report to the College Entrance Examination Board by the Commission on English. Cloth, 295 pp. \$2. Harvard University Press, Cambridge, Mass.

The appointment of a Commission on English to study the English examinations of the College Entrance Examination Board was authorized by the Committee on Review of the Board in the spring of 1929. The Commission consisted of nine members with Professor Charles Swain Thomas, of Harvard, as chairman. The book just issued is the detailed report of the Commission.

Part I of the report is an analysis of conditions, past and present, in regard to the College Entrance Examinations in English, and Part II is a study of fundamental concepts and possible developments including the Commission's recommendations.

Questionnaires to teachers and students, the examination questions themselves, together with students' answers and readers' markings, the methods of choosing readers, and the technique of grading the papers supplied first-hand material for the Commission's study. The information obtained

(Concluded on Page 99)



A living *Washington* comes to the classroom

Thrilling motion pictures of his life...prepared for the Bicentennial...*now ready!*

A FLASH of light on the screen, and the thrilling drama begins.

Washington—boy, surveyor, colonel, general, president—becomes a living reality. In four fifteen-minute reels—available on safety film in both 16- and 35-millimeter widths—the class sees reenacted the whole life story of the man who, through the sheer force of his character, brought a nation into being.

Both children and adults will cherish these pictures as precious memories. They were prepared, with great care, at the request of the George Washington Bicentennial Commission. They contain much material new to the screen.

You will want these films for your Bicentennial program, and for use in the years to come. Act now to insure their early delivery. Write for details and prices. Eastman Teaching Films, Inc., Rochester, New York.



Present Washington to your classes with all the vividness of actual experience. These motion pictures make textbook history leap into life and action, and are a valuable supplement to your regular teaching program.



*Produced at the
request of the*

**GEORGE WASHINGTON
BICENTENNIAL COMMISSION**

EASTMAN TEACHING FILMS, INC.—SUBSIDIARY OF EASTMAN KODAK CO.



COMMON SENSE ECONOMY

calls for

HOLDEN BOOK COVER PROTECTION

for Textbooks subjected to

**DAILY WEAR—
USE—and ABUSE**

SAMPLES FREE

**HOLDEN PATENT
BOOK COVER COMPANY**
Miles C. Holden, Pres. Springfield, Mass.

GENERAL BUSINESS SCIENCE

by

Jones, Bertsch, and Holtsclaw

A JUNIOR BUSINESS COURSE THAT:

Helps in the selection of life work

Lays a firm foundation for the vocational commercial course on the senior high school level

Equips pupils who must drop out of school with valuable junior occupational skills

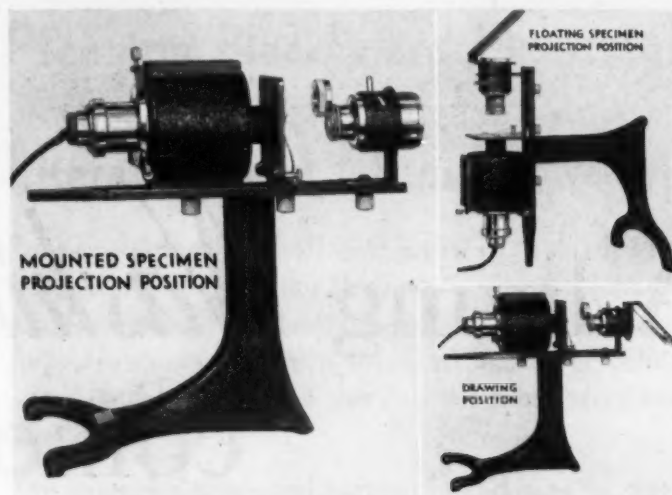
Expands business training into general business education

Is rich in permanent life values

Liberal exchange allowance for used texts makes the cost of adoption very low.

The Gregg Publishing Co.

New York Chicago San Francisco Boston
Toronto London Sydney



For The High School A Triple-Purpose Micro-Projector

THIS new micro-projector, built and priced especially for the high school classroom, does three jobs simply and well:

It projects both (1) permanently mounted specimens and (2) fresh specimens at distances from 4 to 15 feet. And (3) provides for the precise drawing of microscopic fields.

The outfit is light, (5¼ lbs.) strong, portable, simple and ingeniously designed for use in horizontal or vertical positions.

The low price, \$43.50 (for 110 volt A.C.), invites immediate action. (\$46.50 for 110 volt A.C. or D.C.) Subject to the educational discount. Write to Bauch & Lomb Optical Co., 673 St. Paul Street, Rochester, N. Y.

BAUSCH & LOMB

THE MACMILLAN COMPANY
announces

A NEW SERIES OF GEOGRAPHIES

forthcoming in
February, 1932

A series which, in the estimation of the publishers, is to be regarded as the outstanding contribution of the decade to the teaching of elementary geography.

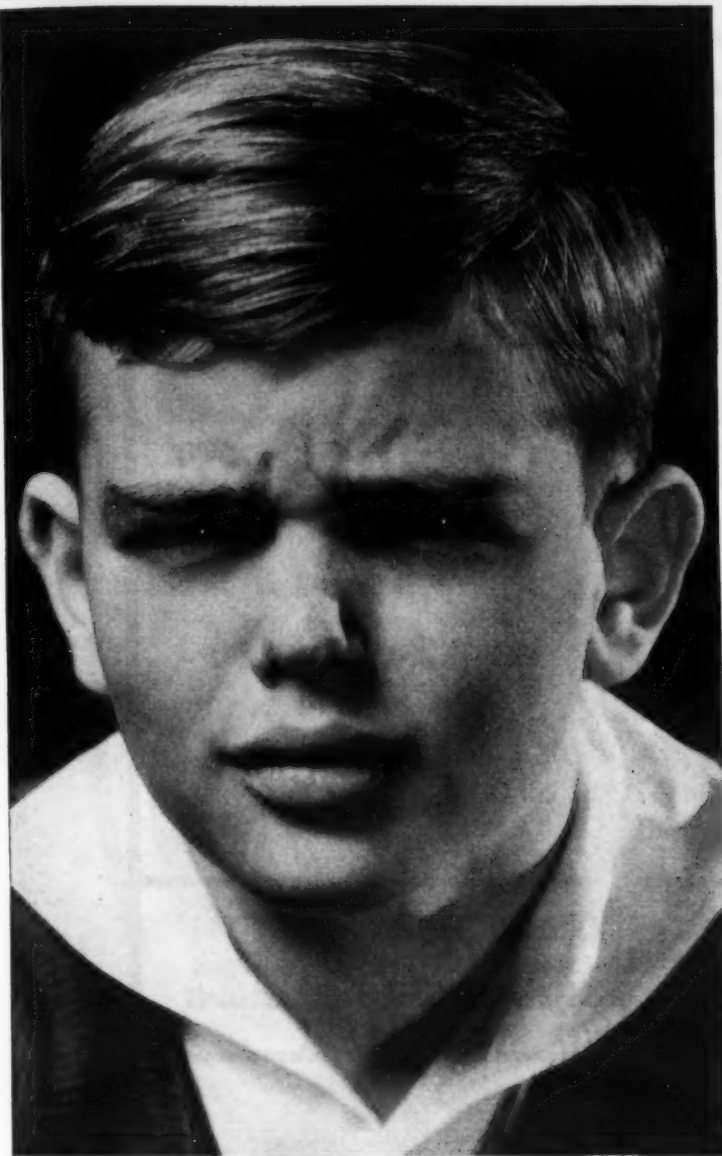
The authors are:

ELLSWORTH HUNTINGTON,
Research Associate in Geography, Yale University

C. BEVERLY BENSON,
Formerly of Cornell and Purdue Universities

FRANK M. McMURRY,
Professor Emeritus of Education, Teachers College, Columbia University

New York THE MACMILLAN COMPANY Dallas
Boston Chicago San Francisco



Take the **SQUINT** out of Blackboard reading

WHEN you weigh blackboard value, consider its visibility . . . *what happens when your pupils read from it.* If its surface is shiny, if it reflects light; then such blackboard should not be used in your school. Shiny, reflecting surface means that pupils cannot see all of the writing all of the time, from any angle in the room. Writing that fades causes *squint* . . . and *squint* is the forerunner of eyestrain, impaired vision and other serious ills that retard school progress. Teachers and pupils should be protected against this kind of blackboard.

Make sure . . . insist on *Sterling Lifelong Blackboard*. Unlike other blackboards, it positively will not shine, reflect light or fade-out writing.

It has smoother writing qualities, too, with a surface that is free from irregularities, blemishes and imperfections . . . and so durable, once installed it is off your mind for the life of the building. A sample of this cement-asbestos blackboard, cut right from stock, gladly sent free to interested educators and school board members. Address Dept. S12.

Weber Costello Co.
Chicago Heights, Illinois



**Makers of STERLING LIFELONG BLACKBOARD, OLD RELIABLE HYLOPLATE,
VELVASTONE, GLOBES, MAPS, ERASERS, CRAYON**

(Concluded from Page 96)

from all these sources is tabulated and discussed and the Commission's conclusions are stated.

A sharp distinction, among critics of the College Entrance Examinations, prevails between the older type or restrictive examination and the later or comprehensive examination. Most critics prefer the latter and the Commission decidedly agrees with them. College teachers, however, are of the opinion that the student's freshman college achievements in English are best predicted by the scholastic aptitude test, then by his high-school marks, the comprehensive examination, and the restrictive examination, in the order named. In view of this prevalent opinion, one may ask why continue the College Entrance Examinations?

A chapter is given to reproduction and discussion of some of the work done by the pupils in the comprehensive examinations. The author of this chapter judges that the grades assigned to the papers reviewed are apparently fair to the pupils, but shows by many specific quotations that the readers are unable to state clearly the reasons for the grades they have assigned apparently by intuition. The author of the chapter seems to agree with those who marked the papers in condemning the reading habits of a boy who wrote a paper graded 50 per cent. Probably it is true that the boy had no real acquaintance with standard literature, yet a thoughtful critic may venture the assertion that his reading habits were more wholesome than those of the pupil who wrote a 95-per-cent paper showing a considerable acquaintance with Ibsen and Shaw. And the 50-per-cent boy, who, it must be admitted, wrote a rather poor theme, nevertheless, was the only one of the group to comment on unwholesome reading; while the 95-per-cent pupil presented a well-written "thoughtful" theme showing forth the morbid, introspective, rebellious mind of the writer, evidently a product of wide reading of the wrong kind of literature for the nourishment of growing minds.

The chapters stating the Commission's views on Examinations in English contain many excellent suggestions to teachers for the examinations they themselves should prepare for their pupils, and a summary of accepted aims in the teaching of English. Of special significance is the statement that

"language should be thought of not merely as a tool for the expression of thought, but also as an instrument for evolving thought." Another feature quite acceptable to all teachers of English is the emphasis placed upon the cooperation of all teachers with the English teacher.

The Commission, while approving of the student's reading of the best modern literature, wisely cautions teachers not to allow modern literature to supersede the classics. To this caution we might add that "best" should be interpreted to mean not merely elegance of diction or cleverness of expression, but the qualities of good style used as a vehicle for wholesome thought and imagination. In other words, the modern literature read should certainly never lead the student to question the authority of the Ten Commandments. But this evil effect is just what much modern literature is doing, if not directly or openly, at least by implication and insinuation, which is worse.

That the term "comprehensive examination" should not be interpreted to mean that the detailed study of literary selections should be ignored is an important caution of the authors of this report. Careful planning for compositions, stress on oral composition in the classroom, a working knowledge of grammar, objective tests in the classroom, and examinations as a regular school procedure are among the recommendations which no one can challenge. Special coaching for examinations is decried as an obvious evil.

The final chapter of the book is a summary of specific recommendations. Among others are these: The retention of the comprehensive type of examination.

The consideration for college entrance of (a) the scholastic aptitude test, (b) the school English records, (c) the English examination grades.

Greater variation in form and content of the examinations from year to year.

Caution in adopting new-type tests.

Consideration of an optional "honor" question. Composition to test power to think clearly and to organize and express thought coherently on a subject within the student's mental grasp.

A varied list of theme topics—some for the nonliterary student.

Test in literature to show how fully the student

has understood and appreciated what he has read.

That the College Entrance Examination Board should make its policies and procedures better known. — E.W.R.

The Ship Book

By Jean H. Dukelow and Hanson Hart Webster. Cloth, 280 pages. Houghton Mifflin Company, Boston.

Travel on water commands a special interest; travel on the high seas stirs the imagination; and many things can be said about a ship which arouses enthusiasm.

The authors here describe the great ocean liners and the service they render. They tell something of the cargoes these wonderful ships transport, and the number of passengers they convey from country to country. The book also describes some of the picturesque old-time sailing crafts, as well as the modern yacht.

In a brief sort of way, helps are provided for the building of model boats. The various parts of a modern ship are described. Colored illustrations enliven the text.

The House on the Hill

By Bertha Clark. Illustrated by Gertrude H. Howe. Cloth, 142 pages. Price, 75 cents. Published by Little, Brown and Company, Boston.

Here is a story for children. The house on the hill is the home of a family of children who engaged in delightful occupations, games, and pleasures in which household pets come into play. There were indoor and outdoor experiences, child pastimes and adventures—all charming in their way.

Our Plant Friends and Foes


By William A. DuPuy. Cloth, 278 pages. The John C. Winston Company, Philadelphia, Pa.

This supplementary reader for upper grades of rural schools has a modern viewpoint.


A Practical Reader for Adults

Books I and II. Josephine D. Mason and Gertrude E. O'Brien. Cloth, 72 and 76 cents respectively. D. C. Heath and Company, Boston, Mass.


These readers, addressed to illiterate adults, have evidently grown out of the experience of the writers. The vocabularies, the subject matter, and the entire approach are distinctly for the mature man.




A FROG'S EYE



MOTH'S EYE



SPIDERS' EYES



CAT EYE

WHAT A WORLD THIS WOULD BE WITHOUT EYES!

It is the duty of every school executive to safeguard the eyesight of all those in his school.

Inferior chalk crayons ruin blackboards and often cause irreparable eye strain.

The famous **'HYGIEIA'**
DUSTLESS CRAYONS

are especially made so as to protect your blackboards. The clear white marks they make are easily read all over the classroom.

REG. U. S. PAT. OFF.

THE AMERICAN CRAYON COMPANY

HOME OFFICE AND FACTORIES 309-369 HAYES AVE., SANDUSKY, OHIO

SAN FRANCISCO - 116 NEW MONTGOMERY STREET. DALLAS, TEXAS - SANTA FE BUILDING

NEW YORK OFFICE - 200 FIFTH AVENUE

Send for our booklet "A VITAL QUESTION-GENTLEMEN" It contains good ideas on the care of blackboards

JUNIOR- AND SENIOR-HIGH-SCHOOL GROWTH AND ITS EFFECT ON HOUSING REQUIREMENTS

(Concluded from Page 32)

acter. This alarming information on the physical condition of the young men of the country caused 36 states to pass laws requiring physical education to be offered in all public schools.

Also, the standards for high schools as prepared by the Ohio State Department of Education require that every first-grade high school have a gymnasium of standard size and also an auditorium, unless satisfactory evidence is presented to the department why this provision cannot be met. In the case of smaller high schools the standards permit the substitution of a combined auditorium-gymnasium plan. Inclusion of these facilities, together with larger sites to allow for adequate recreation space, tends, of course, to increase per-pupil cost of high-school housing.

Obviously, the foregoing changes have resulted in greatly increasing the capital-outlay cost during the period considered. Because of the varying types of buildings, their appointments, and the difficulties of calculating capacity, per-pupil cost is not an entirely satisfactory method of estimating costs. Since, however, only enrollment figures are available, that is the only method that can be used to approximate the effect of the rapid increase in terms of cost. The figure which is used in these calculations is \$500 per pupil for both junior and senior high schools, a figure which at present is too high for small communities and probably too low for cities, but serves nevertheless fairly satisfactory for approximations. By applying to this figure the index of construction costs for each of the years for which enrollments are available, the following per-pupil costs are obtained: 1890, \$200; 1900, \$213; 1910, \$280; 1920, \$700; 1928, \$545; 1931, \$500.

By multiplying the increases in enrollment by the average per-pupil cost for high-school buildings for the two years, will give an estimate of the amount of money required for adequately housing these increases. Between 1890 and 1900 the reported increase amounted to 316,278, which, if multiplied by the average of the building costs for the two periods, that is, \$213 and \$200, gives \$65,153,000, the capital outlay needed for high-school purposes for that decade. Following the same procedure for the other periods the figures in round numbers are as follows: 1900-10, \$98,000,000; 1910-20, \$461,500,000; 1920-28, \$937,500,000; and 1928-31, \$850,000,000; or a total of \$2,362,000,000 the estimated amount to house the increase in junior- and senior-high-school enrollment since 1890. The figure for 1928-31 is probably too high for that three-year period, but is due to the fact that the 1931 enrollment figures of 5,000,000 includes all public high schools, whereas the earlier figures are based on incomplete returns to the Office of Education. A part of this amount should probably be distributed among the other periods. This total figure of the amount necessary for increased enrollment does not take into account the difference in space and equipment requirements for the newer subjects as compared with those of 1890. If this were done it would tend to lower this total since the base for estimating the cost was the 1931 figures for per-pupil housing. Such differences as this might make would probably be offset, because the \$500 figure is likely too low. When this total is compared with the total reported on public-school buildings in 1927-28, amounting roughly to \$5,500,000,000, it does not seem unreasonable, representing 43 per cent of the grand total.

A study of these high-school increases serves also to partially explain the rapidly mounting cost of education, about which so much is now being said, and about which much more will

probably be said and done.

The point of the whole discussion of greatest interest to school business officials is, What of the future? Will the next ten years show as great an increase in junior- and senior-high-school enrollment as the past? It is, of course, always dangerous to predict but in conclusion, it is the writer's judgment that increases in the junior- and senior-high-school enrollment will continue at a somewhat slower rate than for the past decade for the following reasons:

1. The rather common acceptance by both school people and laymen that a high-school education represents the minimum education for the individual. Since in 1926 but 53 per cent of the pupils of high-school age were actually in high school, there is still a good margin from which increases might come.
2. The organization of junior and six-year high schools, both of which take the seventh- and eighth-grade pupils from the elementary- to the high-school field.
3. Better adaptation of curricula to the pupil's needs.
4. Normal population increases.

IOWA SECRETARIES OF SCHOOL BOARDS MEET

The school-board secretaries of Iowa held their first meeting November 14, at Des Moines.

The speakers at the meeting were Miss Agnes Samuelson, Mr. E. R. Brown, and Mr. R. C. Williams. The association adopted a resolution, approving the use of standardized school-board secretary and treasurer reports, to be submitted to the research department of the state education department. It was believed that the adoption of standard forms would be of value in assisting school boards to compare their methods and expenses and to operate more efficiently.

The meeting closed with the election of officers for the year. Mr. Walter McLain, secretary of the Ottuma school board, was elected president, and Mr. Peter Nicks of Dubuque, secretary.

An Attractive, Business-Like Desk Set for Modern Teaching



THOSE educators who seek attractiveness, flexibility, and efficiency in the classroom will approve this modern desk set by Heywood-Wakefield. It is an all wood desk set similar in design to the type which many pupils will use upon entering business careers; a desk that permits flexible seating arrangements and one which assures easy and thorough sweeping and cleaning of the classroom.

It is strong, rigid, and comfortable. The posture type of chair has a properly curved and pitched back and a deep, supporting saddle type seat. This furniture is available in a wide range of sizes, too. Consequently, it is comparatively simple to obtain a uniform, business-like appearance throughout the entire school building.

The Heywood-Wakefield Table Desk Set is built of sturdy stock; is well braced all around; and is entirely capable of withstanding the severe usage which schoolroom equipment is sure to receive. The specially designed bentwood braces add extra strength, yet are so placed that they do not interfere with the pupil's feet. Before selecting any classroom equipment, be sure to investigate this and other practical styles of Heywood-Wakefield School Furniture. A note to the nearest sales office listed below will bring you complete information.

SALES OFFICES

Baltimore, Md.	New Orleans, La.
Boston, Mass.	New York, N. Y.
Buffalo, N. Y.	Oklahoma City, Okla.
Chicago, Ill.	Philadelphia, Pa.
Columbus, Ohio	Pittsburgh, Pa.
Dallas, Texas	Portland, Oregon
Houston, Texas	San Antonio, Texas
Los Angeles, Calif.	San Francisco, Calif.
Minneapolis, Minn.	Seattle, Wash.

HEYWOOD- WAKEFIELD

ELIMINATE—
BLACK, GUMMY, OILY,
UNSIGHTLY WOOD FLOORS



First Complete
**HANDY
REFERENCE
MANUAL**

Creates a Saving
In School Maintenance

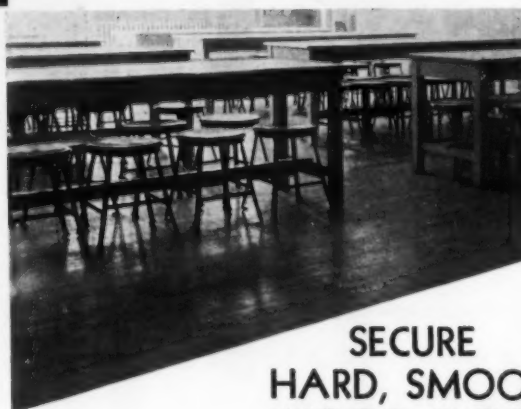
Write Today For
FREE COPY



Eliminates The Use Of Greasy Oils

Produces Attractive Floors

Reduces Maintenance Cost To A Minimum



**SECURE
HARD, SMOOTH, DURABLE
WOOD FLOOR SURFACES**

HILLYARD CHEMICAL CO.

ST. JOSEPH, MO.

COPYRIGHT 1931

**THE COPERNICUS JUNIOR HIGH
SCHOOL, HAMTRAMCK,
MICHIGAN**

(Concluded from Page 39)

with the conventional disharmony of stained or varnished oak or yellow-pine trim, dull red or brown pupils' desks, and golden-oak teachers' desks.

The use of color in school buildings is justified on the basis of common sense, psychology, and esthetics. Psychologically it is no longer necessary to use haphazard judgment in choosing a color scheme. The effects of certain colors on the nervous system are definitely known. The problem, so far as the educator is concerned, is controlling the color environment so that the desired effect is obtained. For the present, it would seem that educators must be content to limit themselves to those colors which (because of the limited vocabulary of this field) must be termed "majority colors." These are the colors which, fortunately, have approximately the same effect on the great majority of persons.

The evidence indicates that there is a considerable factor of individual differences to be considered. Further research along this line will undoubtedly unfold possibilities for more specific control of the color environment. This may permit more exacting coloration for special rooms, particular subjects, or even perhaps for small groups of individuals of a similar type whose nervous disposition calls for special conditions.

The Color Scheme

The use of color in the Copernicus Junior High School has been complete. It is a comprehensive color unity, internally and externally, based upon a definite color plan. The exterior of the building is of brick in several shades of orange and buff, with which the window frames, of a slightly darker but similar shade, harmonize. Colored terra-cotta inserts of variegated colors brighten the cornices.

In the interior, the dadoes of the corridors, stairways, and toilet rooms are of tile in selected colors. Fixtures, both in design and color treatment, harmonize with the surroundings. In adopting the color scheme, Dr. Keyworth was not acting inconsistently with the facts of color psychology.

This is the color scheme of the classrooms:
Kindergarten: taupe and sunshine yellow, with fireplace and sand box in green tile.

Elementary grades: taupe and blue.

Junior high school: variations of taupe and blue, and taupe and green.

In addition, libraries, corridors, auditoriums, etc., are also in appropriate colors with variations of a more enlivening stimulation, such as orange, red, gold, and the lighter shades of blue.

Equipment was either delivered ready for lacquering or was finished in lacquers according to specification. Spraying machines quickly and economically applied the color to furniture, equipment, and woodwork.

All walls and ceilings were sprayed with a washable, nonglare wall paint. The use of these materials facilitates repairs or mends or spots showing wear, reduces eyestrain, and in general has proved to be an economic measure.

The sound-proofing of the music rooms has been accomplished by means of double-glassed doors, sound-absorbing baffle plates placed in ventilation shafts, and sound-deadening facing of the ceilings. In addition, the floors and walls of the individual rooms are mounted on springs, and sound-absorb-

ing materials have been inserted beneath the floors and the walls.

The Copernicus Junior High School illustrates the fact that the building of a modern school has become a community project in which the utmost resources of education, science, and architecture must be perfectly integrated in order to produce a harmonious whole.

**COMPLETE NINTH ANNUAL BUILDING
PROGRAM**

The committee on buildings has recently presented to the board of education of Worcester, Mass., a report of the work carried out in connection with the ninth annual building program. During the year 1931, the school board completed the erection of the Providence Junior High School, an addition to the South High School, and began the construction work on the Heard Street School.

During the year, the school enrollment increased by approximately 700 pupils, and a rehabilitation program of renovations and improvements to grammar-school plants was carried out.

The committee, in concluding its report, emphasized the need of a continuous and careful study of schoolhouse needs. Since all part time is a thing of the past, it is especially necessary that the school board be watchful in anticipating school needs, so that the city will not again find itself in the position of offering less than a normal school day to its children.

BUILDING NEWS

♦ The voters of Oil City, Pa., recently approved a bond issue of \$600,000 for school-construction purposes. The proceeds of the bond issue will be used to erect an elementary school, to complete the present senior high school, and to purchase sites for new buildings and additions.

♦ Boston, Mass. The school board has begun a survey of the city to determine the need for additional school facilities. The survey has been begun as a preliminary to the carrying out of a five-year building program.

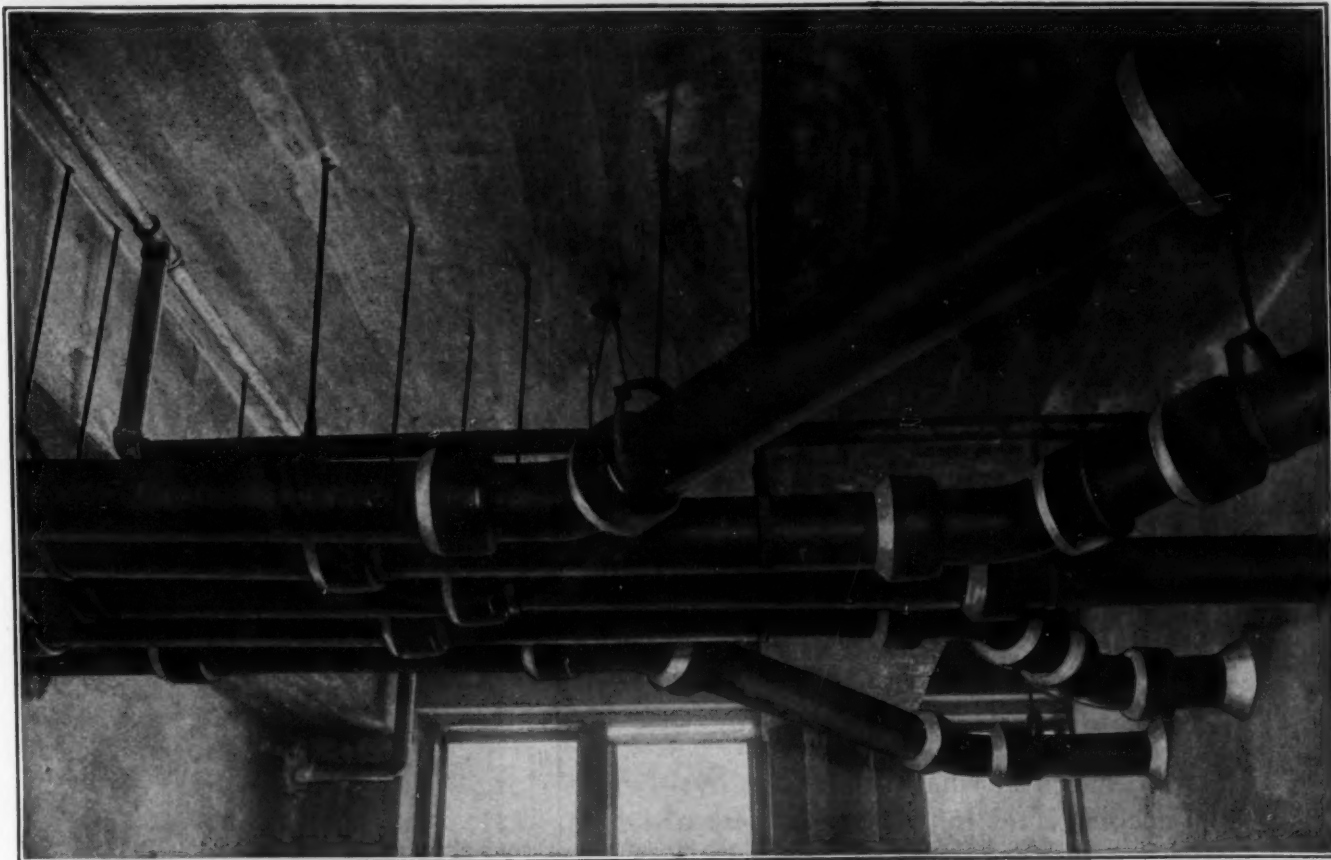
♦ Montrose, Colo. The school board of Montrose county is completing the erection of a combination gymnasium-auditorium, at a cost of approximately \$30,000.



A TYPICAL VOCATIONAL STOCKROOM, COPERNICUS JUNIOR HIGH SCHOOL, HAMTRAMCK, MICHIGAN
B. C. Wetzel and Company, Architects, Detroit, Michigan

EASY TO INSTALL

KNIGHT-WARE Pipe and Fittings are hung in the same manner as other materials, with one hanger per length on horizontal lines and one support every ten feet on vertical risers. Joints are economically made and easily poured. They withstand fully 20 pounds pressure.



KNIGHT-WARE Drainage and Ventilating Lines in Columbia Presbyterian Hospital Center, New York City. This well known hospital center was equipped throughout with KNIGHT-WARE.

Knight-Ware - - the Complete Answer to Every Laboratory Equipment Problem

K NIGHT-WARE Sinks are the complete answer to the question of trouble-free, satisfactory laboratory equipment because they are:

Acid-proof. Completely resistant to the action of acids (hydrofluoric alone excepted), alkalis, chemicals, and corrosives, whether weak or strong. This property is not imparted by glaze, veneer, enamel, or other surface treatment. "It is in the body itself." Knight-Ware is the same all through.

One-piece throughout. No joints to spread. No leakage to cause costly maintenance, repairs, and replacement.



END TABLE SINK with Back Cut Out for Waste Trough
Every KNIGHT-WARE acid-proof sink is built to your individual specifications. Any special conditions or requirements can be met perfectly at no increased proportionate cost.

KNIGHT-WARE

Laboratory Sinks : : : Drain
Lines : : : Sumps and Dilu-
tion Basins : : : Ventilating
Ducts and Duct Caps.

Easy to keep clean. No staining or discoloration. Smooth interior—no collecting of surface deposits. Rounded corners—no trapping of dirt or sediment.

Custom-built. Made by the hands of craftsmen exactly as you say. Any size, shape, or special features. Your "pet ideas" can be incorporated at minimum cost.

Inexpensive. Low first cost. Easy and inexpensive to install. No upkeep. A most economical acid-proof installation.

Our complete 48-page catalog in color, "Knight-Ware Laboratory Equipment", is yours for the asking. You will find it the guide to the same safety, low first cost and last cost, and all-around satisfaction as has been enjoyed by many of America's outstanding educational institutions and hospitals.

Typical KNIGHT-WARE Installations

Princeton University
Columbia University
West Virginia University
Ohio State University
Johns Hopkins University
New York University
Washington University
Duke University
Purdue University
Penn State College
Lafayette College
Battelle Memorial
McGill University
University of Illinois
Lehigh University
Temple University

MAURICE A. KNIGHT

149 SETTLEMENT STREET

AKRON, OHIO

OFFICES:

New York City, 804 World Bldg., Beekman 3-1657
Chicago, 230 N. Canal St., Franklin 4658
San Francisco, Merchants Exchange Bldg., Douglas 375

Philadelphia, 600 Arch St., Rittenhouse 6300-6301
St. Louis, 1st Nat'l Life Bldg., Main 1784
Niagara Falls, 309 United Office Bldg., Niagara Falls, 307
Montreal, Queb., 1307 Notre Dame St., W., Main 2625

GUARANTEED SATISFACTORY
KNIGHT-WARE
"IT IS THE BODY ITSELF"





What
happens
to the
keys?

LEARN
ABOUT

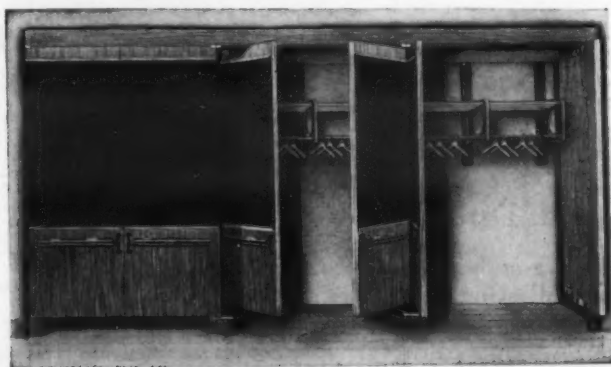
TELKEE

The building is completed « » the keys are handed over, and then « » how are they cared for? Must you work out your own salvation?

Knowledge of what the TelKee System accomplishes for the proper care of keys in schools « » large or small « » will convince you that TelKee is needed wherever locks are used. Write for literature.

Thayer **TELKEE** Corporation

114 East 17th Street, Los Angeles, California



EVANS
"Vanishing
Door"
WARDROBE

Class B-B
Without jambs
or trim

This wardrobe

is made for plaster ends, backs and ceilings. No jambs nor trim required; only doors, fillet, hinges and interior of racks and garment hangers completing the installation.

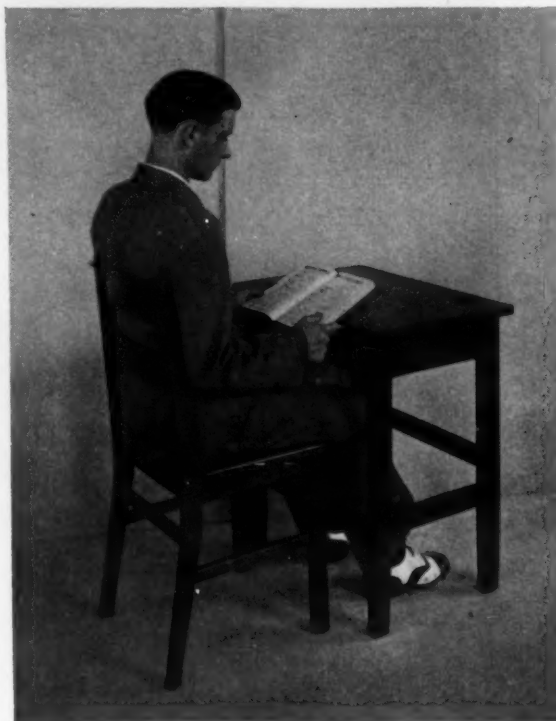
The hinges used are of heavier construction than any previous manufacture and are unconditionally guaranteed to last the life of the building. There are no noisy tracks nor rollers to stick or bind, nor intricate mechanism to get out of order.

"Vanishing Door" wardrobes are furnished complete in the knockdown. All woodwork is cut to size and only needs nailing in place. The hinges are easier to put on than common butt hinges. The cost of installation is small.

Catalog "K" fully illustrates many types of school wardrobes, with specifications and price list. Write for a copy.

W. L. EVANS
WASHINGTON, INDIANA, U. S. A.

STURDILY BUILT, SCIENTIFICALLY DESIGNED—AND ECONOMICAL



The "JESCO" is a movable 2-piece classroom unit for Junior and Senior High Schools. It is built of the finest material to give uninterrupted service; its scientifically designed back and deeply saddled seat assure correct posture; and its economy lies in its practicability, the readiness with which it may be moved to various rooms to relieve congestion.

Specifications and quotations gladly submitted without obligation.

FURNITURE FOR ALL DEPARTMENTS OF SCHOOL

Write for our 1931 catalog of school Library,
Laboratory and Vocational Furniture.

JOHN E. SJÖSTRÖM CO.

1715 N. 10th St.

EST. 1893

Philadelphia, Pa.

BLACK BOARDS

SILICATE
•
NATURAL
SLATE

SELOC
SLATE
•
BLACK-
BOARD
CLOTH



Framed or Unframed
Hanging Type or on Rollers
Also
Silicate Book Slates

CORK
BULLETIN BOARDS

Oak finished frames or unframed
All Sizes: 18x24 inches and up

N.Y. SILICATE BOOK SLATE CO.
20 VESEY STREET NEW YORK CITY

STERLING

VEGETABLE PEELERS

Let Us Send You Information

Do you know the fastest, most efficient, and most practical means of paring vegetables in your kitchen?

Do you know whether your equipment is giving you 100% efficiency?

Do you know how much longer your table service will last if it is burnished regularly?

The Josiah Anstice Company through its years of specialization in vegetable paring and silver burnishing has acquired a wide knowledge of these important fields which it will gladly send you for your inspection without any obligation whatsoever.

You will find it interesting and instructive, so send for it today.

JOSIAH ANSTICE & CO.

110 HUMBOLDT ST.

ROCHESTER, N. Y.

STERLING

SILVER CLEANERS
AND BURNISHERS

BURLINGTON BUILDING PROGRAM INCLUDES JUNIOR-HIGH-SCHOOL ORGANIZATION

(Concluded from Page 42)

Horace Mann Junior High School

This school is located near the center of population to meet a possible future growth in the south part of the city. It is situated on a 4-acre site, adjacent to an 18-acre naturally wooded park belonging to the city. The city government has made it possible to have all outdoor recreational sports of the school carried on in this park. The seventh, eighth, and ninth

grades are housed in this building.

The Oak Street and Horace Mann Junior High Schools, with capacities of 700 pupils each, were completed and occupied last summer, at a cost of \$230,000 each. The exterior design is different; the interior plan and arrangement is almost identical. The auditoriums have a seating capacity of 650 each, a large ample stage, supplied with the best of electrical equipment, physical-training classrooms for boys and girls, home economics, shops for boys, offices, classrooms, clinic, and restrooms, science, art, music, and library facilities. The unit-vent type of heating is used throughout both buildings.



ADDITION, PROSPECT HILL ELEMENTARY SCHOOL, BURLINGTON, IOWA.

Wm. B. Ittner, Architect, St. Louis, Missouri.

The addition is planned to permit of further expansion of the school in the erection of a second story.

The junior high school became a part of the school organization last September, thus giving four units carefully and closely articulated—the elementary unit of kindergarten through the sixth grade; the junior-high unit of seventh, eighth, and ninth grades; the senior-high unit of tenth, eleventh, and twelfth grades; and the junior college offering freshman and sophomore work.

The balance of the program has been deferred to a later date.

TWO FUNCTIONALLY PLANNED ELEMENTARY SCHOOLS

(Concluded from Page 45)

artificial illumination. The orientation is indicated by a compass on the floor plans.

Other Features

In the Minneapolis classrooms, blackboards, 48 in. wide are placed on the front wall and 42 in. wide on the side opposite the windows. In Detroit, blackboards are all 42 in. wide and are placed on three sides of the classroom—the front, the rear, and the side opposite the windows. In Minneapolis the schedule for the height of the chalk rail above the floor for the kindergarten and the six elementary grades is as follows:

Kindergarten	22 in.
First and second grades . .	24 in.
Third and fourth grades . .	26 in.
Fifth and sixth grades . . .	28 in.

The schedule in use in Detroit is practically the same. Both cities use bulletin boards of the same width as the blackboards and place them at the same height from the floor as the blackboards are placed. Detroit in addition puts a tacking strip above the blackboards. Teachers'

The lightest 1000 watt sound on film projector ever made and A CHALLENGE to the world in the perfect reproduction of sound!

"I finished installation of West Kentucky Industrial College last week.

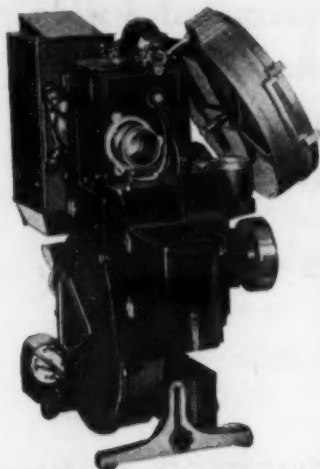
As to the equipment, I certainly want to take my hat off to any man who can design equipment that runs as smoothly and runs as good as this does. It is 100% perfect."

AMERICAN VISUAL SERVICE
C. H. Brandon

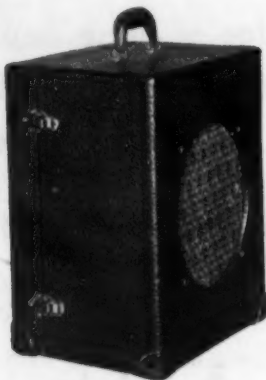
"Heard other portable sound equipments, up to more than double the price, and I must say, truthfully, that results with the HOLMES were so far superior that there is no comparison.

Dialogue clear and distinct, no muffled tones and one very noticeable feature, there was no rushing or roaring of sound reproduction."

ELLIOTT FILM CO.
F. York Elliott



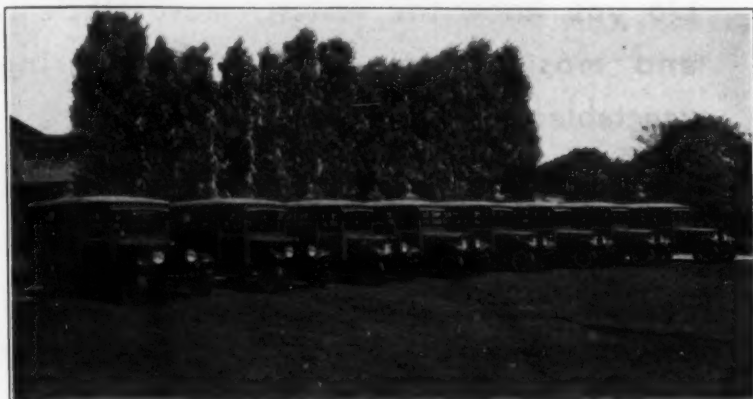
HOLMES Silent Projectors now in use can be equipped for sound-on film at small cost.



Complete outfit—which includes everything for reproducing sound-on film talking pictures, ready to run, ALL WEIGHING LESS THAN 90 LBS.

HOLMES PROJECTOR COMPANY
1813 Orchard Street, Chicago, Ill.

It is the **BUS BODY** That Makes the Chassis Adaptable to Your Needs **YORK-HOOVER SCHOOL BUS BODIES MEET EVERY NEED**



One Body or a Fleet

For Any Make Chassis
To Carry Any Number
of Children

*Tell us your problems and we
will help you solve them*

YORK-HOOVER BODY CORP.
YORK, PA.

wardrobes and supply cabinets are built-in features in both school systems. Minneapolis also builds in a bookcase in each classroom. Coatrooms of a net width of 5 ft. are provided at the rear of each classroom in Minneapolis, while Detroit uses lockers which open into the corridor.

Excellent Sanitation Provided

On the first floor of each elementary school building, Minneapolis places two small toilet rooms at one end of the coatroom which are accessible only from the coatroom. The location of these rooms is shown in the floor plan of the typical classroom and in the end elevation. This arrangement of toilet rooms is used only in connection with classrooms designed for children in grades below the fifth. On the second floor general toilet rooms are provided, as shown in the floor plan of the Julia Ward Howe school. The Brady school makes provision for two boys' toilet rooms and two girls' toilet rooms on each floor.

Ventilation Differs

The Brady school is ventilated by means of a central fan system, and the Julia Ward Howe by a unit ventilating system.

Both buildings are fireproof throughout, the word *fireproof* being used in its popular application to buildings. Ample corridors and stairways, carefully located for safety of human life and dispatch of traffic, characterize both buildings.

A careful study of the plans of both of these buildings will reveal many other admirable features. Suffice it to say, that they embody much study and many earnest attempts to make the elementary school building function to the best advantage in promoting the welfare of the children who attend.

ECONOMY IN THE PLANNING AND CONSTRUCTION OF SCHOOL BUILDINGS

(Continued from Page 49)

not be satisfied short of performance. If a site is secured that needs costly construction to protect adjacent property, that cost cannot be ignored.

Orientation of buildings, location of playgrounds, landscape costs, and upkeep expense are all important considerations. Likewise, possible future extension of the site must be estimated, since it is likely that the school will eventually grow beyond the needs of the first investment.

Design of School Buildings

School structures erected throughout the country vary widely in their characteristics. However, one generalization may be made in respect to character; too often the educational program has been determined by the character of the building solely dictated by architectural design. Because attractive school buildings provide the basis for the educational mechanism, every element is vital from the standpoint of finance, convenience, and that subtle, but important, influence which comes from environment.

School buildings should be conceived first in plan and arrangement, then in elevation and design. Hundreds of school buildings planned from elaborate perspective, without regard to interior arrangements—light, service, or activities—frequently do not serve the purpose for which the school program exists. Nowadays schools, particularly junior and senior high schools, are specialized organizations making complex demands on their housing facilities. An important feature in future economy consists in providing rooms that can be converted readily for the use of special activities without ex-

pensive additions or alterations. However, provisions for special activities which are not well established by years of tradition or requirements of universities, do not warrant a heavy installation expense if the rooms thereby are rendered practically useless for other purposes.

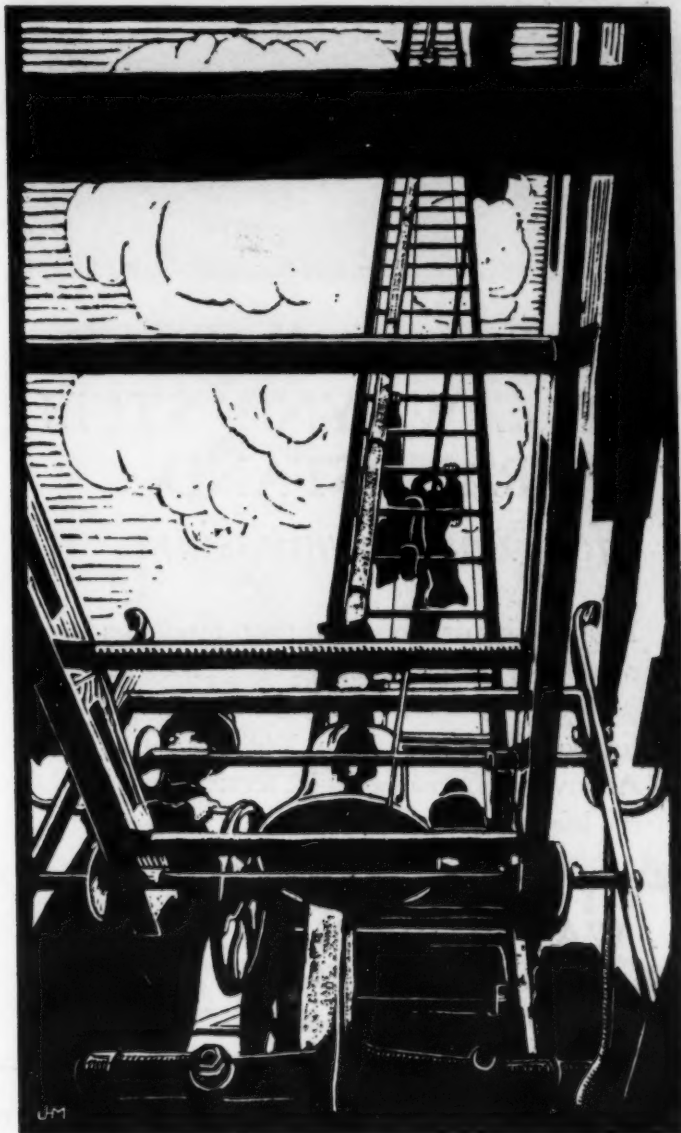
Extensive experience with a large number of school buildings has demonstrated that the majority of projects are not completely thought through. Economy in planning can be achieved to a marked degree when a trained personnel translates the needs of the educational program into design and detail for the builder. Just as training is needed in the classroom, so is the same high character of training needed to visualize the finished structure, and to know that the building in use will function as it should.

Advantage should be taken of the valuable experience resulting from *previous* planning and construction, and of the results of research by responsible authorities, both locally and nationally. For this reason certain states have set up service bureaus to assist small communities. Larger cities have employed an engineer or architect to intensively study the correlation of educational needs with the details of building design and construction.

Very rarely is it possible to make major changes in the plans of an experienced architect which will result in marked economy. However, thousands of dollars can be saved by watching the innumerable details that go to make a complete design. It is not impossible to effect a saving equal to the cost of a classroom by watching small items in the requirements of the plans and specifications. Simplicity must be the keynote. When items are left to the imagination of the contractor, costs increase and the results are most unsatisfactory to all concerned. Almost every school system sooner or later comes under the spell of a standardization, but in this day of

(Continued on Page 108)

FULL PROTECTION thru INSURANCE



SUBURBAN and metropolitan centers throughout the country are maintaining modern fire apparatus and equipment to safeguard life and property from ravages of fire. » But — should these protective measures fail and the property be damaged or destroyed — adequate insurance alone will properly re-imburse the property owner. » Agents and policyholders of "The Home of New York" — a strong stock company — who are properly insured against fire are provided with full protection in the event of a loss through resources sufficient to meet all obligations. » » » »

Cash Capital	\$24,000,000.00
Net Surplus	\$36,398,755.35
(Accumulated over 78 years)	
Surplus to Policyholders	\$60,398,755.35
Additional Funds	\$38,936,368.00
(Pro Rata Unearned Premiums)	
Reserved	
for miscellaneous accounts, taxes, dividends, and other obligations	\$12,754,865.55
Assets	
Cash on hand, funds conservatively invested or current balances payable when due	\$112,089,988.90

THE HOME INSURANCE **NEW YORK**
COMPANY
ORGANIZED 1853 59 MAIDEN LANE WILFRED KURTH, President

Strength

« »

Reputation

« »

Service

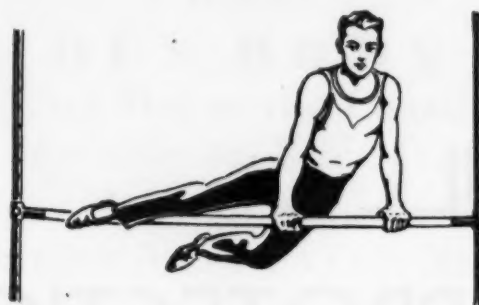


The Economically Priced **TYPE C WAYNE STEEL** **GRANDSTAND** *for Your Gymnasium*

Particularly designed to give maximum number of seats in limited space. Has steel stringers and interlocking seatboards and footboards that join flush. Will not rattle. An investment that will give service during the life of your gymnasium.

Write for Complete Information.

WAYNE IRON WORKS
Largest Manufacturers of Portable Steel Stands
Wayne, Penna.



Send Your Specifications **to NARRAGANSETT!**

Almost a half century ago Superintendents, committees and athletic directors were placing their entire confidence in Narragansett's ability to supply them with sound, sensible engineering suggestions regarding Gymnasium Apparatus . . . its selection and grouping . . . and in the filling of those specifications with Apparatus that was without a peer in its field.

Narragansett is doing it today . . . and doing it better! No one can deny the inestimable value of those long years of experience, not in the building of apparatus alone but in the **proving** of a dependability that offers every new friend the finest assurance of complete satisfaction.

That's why we say "Send your specifications to Narragansett!"

**Gym Apparatus, Steel Lockers,
Cabinets and Shelving.**

The NARRAGANSETT MACHINE CO.

Providence, R. I.

CHICAGO
1504 Monadnock Blk.

NEW YORK
214 East 40th St.

(Continued from Page 106)

educational development standardization acts as a deterrent to progress. To illustrate: Some few years ago a small community needing several schools practiced false economy by employing an architect to prepare a set of plans for a building, using these same plans for buildings to be erected on each of five sites. This saved a few dollars in architectural fees, but the same mistakes occurred in each building. Orientation in some cases was wrong. A few of the buildings are now crowded beyond capacity, with no practicable way to add to them. A more satisfactory arrangement could have been secured by compiling and using a list of standards. These should be segregated elements in the design which have proved satisfactory. Their incorporation in any plan will result in both economy and service. Furthermore, contractors are quick to sense the efficiency of plans built up from standards in continual use, so that the results of the savings are reflected in the cost of the project.

In addition, marked economy can be effected by close coöperation between those responsible for the planning of school buildings, and the municipal and state authorities who prepare school-building codes. Many codes require absurd and wasteful practices in school-building design. Elements that in no way contribute to the safety of the children or the efficiency of the school, are demanded by law. These are inherited from times when schoolhouse construction was not given the attention it receives today. But these requirements must be met, involving as they do an expenditure of money, because no one is sufficiently interested to secure a revision of the laws in keeping with modern schoolhouse planning. An excellent field for economy is possible in this regard.

Making the Building Serviceable

As soon as the educational program has been formulated, the architect is given the opportunity to prepare a layout and to determine the type and character of the construction giving the greatest service. Every board of education employing an architect for the preparation of plans and specifications is entitled to complete details covering each item in construction. Owing to the feverish haste that many boards of education develop when undertaking the building project, architects are sometimes unable to complete the plans and specifications in detail and to a degree that eliminates all guessing on the part of the bidders. Even if it takes additional weeks, plans and specifications should be finished.

These plans should include not only building construction, but also mechanical and electrical features, which must be designed by competent engineers. The practice of allowing specialty salesmen to prepare designs for incorporation into the construction drawings should be strongly condemned for obvious reasons.

The mechanical plant is a feature emphasizing the need for a complete development and careful consideration of operating costs. In many cases, no attention is paid to these features until the architectural scheme is completely developed, with the result that a more expensive type of mechanical installation may be required. The cost of a heating plant in a mid-western high school involved an excess expenditure of some \$50,000 over what would have been necessary had a study of these requirements been made when the structural design of the building was undertaken.

School buildings should be built under one of three classifications. The type of construction predetermines the range of cost. First: class "A" is built absolutely fireproof throughout on steel frame. Second: class "B" is built of reinforced

concrete frame with wood finish. Third is "fire-safe" construction which is sometimes referred to as class "C," although much superior. No building in excess of two stories should be other than class "A" or "B." No school should be built without fireproof corridors or stairs. General local conditions or practice will determine the class of construction suitable in any locality.

Most of the expensive alterations or maintenance jobs are the result of failure to take into account the needs of the program, or to benefit by experience. Consideration must be given to the future. Difficulties must be recognized far enough in advance to successfully cope with them. The initial investment in the building and site is but one phase of the total outlay which a school district must make for the establishment of every plant. High-grade material installed by competent mechanics under proper supervision may in the first instance involve considerable expenditure. Experience with all classes of school buildings indicates that maintenance and operating costs decrease when the original material used is the most permanent for the purpose. However, no single answer to any problem is the only answer, and constant research is necessary to balance durability with first cost.

Coupled with this, studies should be made to determine the effects on maintenance and operating costs created by the design and the materials required for it. The care of the building materials must be developed after the project has been constructed, and the operating personnel must be instructed fully in methods of preservation.

In selecting building materials the question must be asked: "Will this material last the life of the building without replacement?" Costly replacement and repairs mean not only money for labor and materials, but also the dislocation

(Concluded on Page 110)



Give Them What They Should Have

The school boards who have equipped their school washrooms with safe and sanitary A. P. W. Onliwon Service have found that they have given the youngsters under their supervision just what they *want*—and what they *should have*.

Besides being absolutely safe and sanitary, A. P. W. Onliwon Towels are double-folded, thereby affording that double strength and double absorbency which appeals to the young ones. They like and prefer paper towels that enable them to thoroughly dry their hands.

Both A. P. W. Onliwon Towels and Toilet Tissue are dispensed from dust and germ-proof cabinets. Onliwon Tissue is pure, smooth, and soft—a certain protection against troubles that may be caused by harsh, insanitary toilet papers.

Write today for a sample supply of A. P. W. Onliwon Towels and Tissue for testing and the two new booklets—"Two Hands Go To School" and "Lave and Learn."

Pioneers for Cleanliness since 1877



A. P. W. PAPER CO., Albany, N. Y.

ASB-1-32

Please send, free of charge, material checked below:

- ☐ A supply of A. P. W. Onliwon Towels and Tissue for testing.
- ☐ Booklet—Two Hands Go To School.
- ☐ Booklet—Lave and Learn.

Name.....City.....

Address.....State.....



WHAT FOUNTAIN IS STERILIZED?

You're right! None . . . yet, it is used and used without discrimination. This is a common condition . . . but not where Rundle-Spence fountains are installed, because R-S bubblers are outstandingly sanitary. This is the only make of fountain with Vertico-Slant discharge . . . the only fountain with a jet that lips cannot touch. That is why Rundle-Spence Bubblers are so universally accepted.

The complete line of R-S fountains, bath and plumbing fixtures and supplies, is described in our new catalog. Write for it.

RUNDLE-SPENCE MFG. CO.

444 NO. FOURTH ST.

MILWAUKEE, WISCONSIN

RUNDLE-SPENCE

LIPS CAN NOT TOUCH THE R-S NOZZLE



Superior in Safety and Convenience

Dudley Keyless Locks conform to the highest standards of locker efficiency

AMERICA'S up-to-date Schools and Colleges everywhere are using DUDLEY Keyless Locks and Padlocks because of their greater efficiency. . . .

This leadership results from the all-around superiority of DUDLEY Keyless Locks. . . . simple and speedy in operation, enduring long years of wear and tear, rust-proof, fool-proof and absolutely pilfer-proof, they provide maximum safety and convenience with minimum administration expense.

Write today for information and sample lock . . . sent free to school executives upon request.



DUDLEY LOCK CORPORATION
26 N. Franklin St., Dept. A-81 Chicago, Ill.

DUDLEY LOCKS



(Concluded from Page 108)

of the program of the building in question. The cause of economy can be served best by the selection of materials that experience has proved suitable and durable under similar conditions.

Many school buildings are designed in such a way that additions cannot be erected to provide a workable, well-developed school plant, without destroying portions of the original construction. School authorities should not lose sight of the fact that provisions for the extension and enlargement of the school buildings form one of the most important considerations in their economical planning and construction. Although at the time it was built every indication pointed to a lack of further growth, changes in population frequently occur so that additional building facilities were needed a few years after the original building was erected. This was one of the primary requisites of a school building erected in Pasadena, and the economy of the stipulations has manifested itself repeatedly.

MAKING NEW SCHOOL BUILDINGS OUT OF OLD

(Concluded from Page 56)

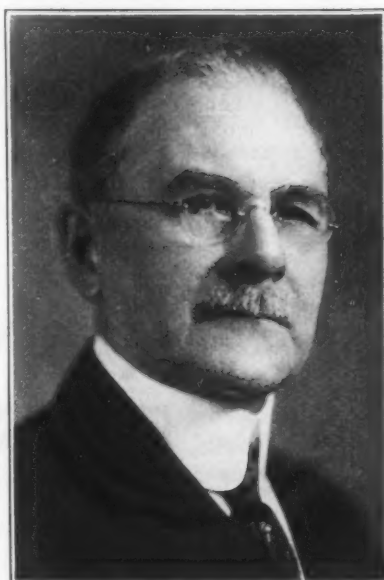
From the pupil standpoint, both window and artificial lighting are modernized. Toilet facilities are placed within close range of all rooms and housed in light, sanitary rooms. Improved stairways, entrances, and fire-escape exits make for increased safety.

The Cost

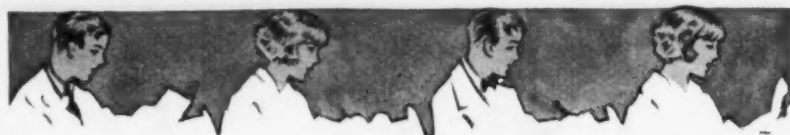
The cost of the remodeling work varies directly with the amount of change and replacement of equipment required for the several jobs. New heating equipment, good installation of unit ventilators, are fairly large items in themselves. The previous condition of plaster, floors, walls and stairways are some of the items determining the cost of alteration. The rebuilding of the

Everett School cost \$47,000. This building was appraised Sept. 1, 1931, by a reliable appraisal firm at \$146,414 sound net value, \$176,116 replacement value. Work on the Cooper School cost \$55,000, present sound net value \$110,153, replacement value \$137,411.

The board of education, through the operation of this plan, has salvaged obsolete buildings from an early discard and the necessity of replacement. Except for the element of fireproof construction, they are practically new, meet the educational requirements, and will continue serviceable for many years to come. The cost is but a fractional part of new construction costs. Children who were formerly penalized by being required to attend school in old buildings, now enjoy accommodations equal to those afforded by the new structures.



THE LATE RANDALL J. CONDON
Died December 25, 1931.



Give them Sunlight without eyestrain

GOOD classroom lighting is an aid to pupil progress. Bad lighting a detriment—a strain on pupils' eyes. The ideal classroom shade is the Draper ADJUSTABLE Shade. It may be drawn upward or downward from the center. That means pupils get the valuable top light, recognized as the best light, from the upper third of the window. This feature is also an aid to proper ventilation. Windows may be lowered from the top, letting in draftless air without flapping of shades to distract.

Draper Shades are made of Dratex Cloth. This is a specially manufactured fabric that lets in sunlight, but modifies and diffuses it to eliminate all glare. Ordinary shades shut out sunlight. Thus pupils get the full benefit of light from the sun's rays with no danger to eyes. Equip your school with Draper

Shades. Interesting literature and sample of Dratex Cloth (taken right from stock) sent free to educators. Please address Department AA.



LUTHER O. DRAPER SHADE CO.

MAKERS OF BETTER SHADES FOR
OVER A QUARTER CENTURY

SPICELAND . . . Dept. AA . . . INDIANA

TEACHERS' SALARIES

♦ Oswego, N. Y. The school board has included a clause in the contracts of teachers, providing that teachers who accept temporary or permanent appointment in the schools shall do so with the understanding that married women with able-bodied husbands will not be employed as teachers. Any teacher who is appointed either on probation or permanent service, and who marries during her term of service, is required to present her resignation to take effect immediately.

♦ Kenosha, Wis. A reduction of \$130,000 has been effected in the city budget for 1932 when teachers, city-hall employees, and vocational and library employees voluntarily accepted a 10-percent reduction in their salaries. The teachers authorized the 10-percent reduction despite contracts in force until June, 1932. The reductions become effective January 1.

PASSING OF DR. CONDON

Dr. Randall J. Condon, widely and favorably known as an educator throughout the country, died at Greenville, Tenn., on December 25, at the age of 69. He had gone to spend the holidays with his daughter and death followed a brief illness of pneumonia.

Dr. Condon who was born in Waterville, Me., in July, 1862, received his training in the public and secondary schools of the state and held degrees from Colby College and Harvard University.

Following his graduation, Dr. Condon was appointed principal of the high school at Richmond, Me. In 1888 he went to Massachusetts, and after three years was made superintendent at Everett. In 1902 he accepted the superintendency at Helena, Mont. He remained in that position for eight years. In 1910 he returned to the east and became superintendent at Providence, R. I. In 1913 he was appointed superintendent of schools of Cincinnati, Ohio, where he remained until his retirement in 1929.

Dr. Condon was well known as an unusually successful administrator. He possessed great ability in the application of business methods to the work of his office and in the handling of administrative difficulties. His counsel on educational problems was constantly in demand by the state and the nation.

Dr. Condon was an active leader of the Department of Superintendence of the N.E.A., and held the office of president in 1926.

Athey

Cut Fuel Cost 15 to 20 Per Cent

If you must economize this year, here is your opportunity to save from 15 to 20% on your Coal Bill.

Athey Metal Weatherstrips saved one St. Louis building \$1,500 a month in coal bills—while in a Chicago building, 572 tons of coal were saved in five months.

Athey Metal Weatherstrips pay for themselves in two to three years.

ATHEY Metal Weatherstrips, because of their unusual construction, keep out wind, draft, cold, dust, dirt, smoke and moisture, and make loose, rattling doors and windows smooth-working and noiseless.

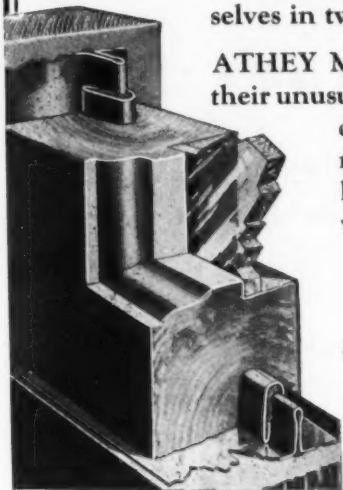
ASK FOR CATALOG

ATHEY COMPANY

6013 W. 65th St., Chicago, Ill.

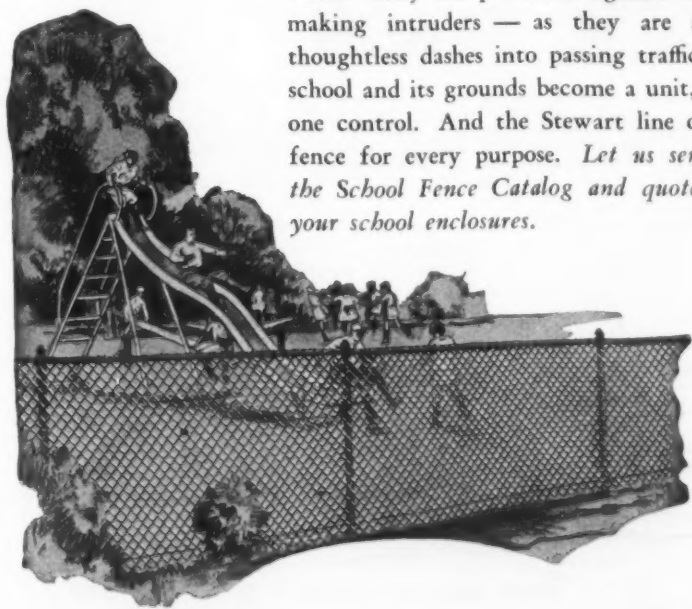
Representatives in Principal Cities

In Canada: Cresswell-Pomeroy Co., Reg'd,
Montreal and Toronto.



Stewart IRON and WIRE FENCES

Children at play rightfully claim the security which a Stewart School Fence affords them. They are protected against trouble-making intruders—as they are against thoughtless dashes into passing traffic. The school and its grounds become a unit, under one control. And the Stewart line offers a fence for every purpose. Let us send you the School Fence Catalog and quote upon your school enclosures.



THE STEWART IRON WORKS CO., INC.
805 STEWART BLOCK CINCINNATI, OHIO

HOLOPHANE Planned Lighting for SCHOOLS



Three Reasons

Holophane Planned Lighting commends itself to school authorities for three reasons:

1. It provides illumination scientifically designed to meet every requirement of modern school buildings.
2. It produces the greatest amount of useful light from Mazda lamps.
3. The fixtures harmonize well with prevailing styles in school architecture.



HOLOPHANE FILTERLITE

provides a high intensity of soft, glareless illumination for schools. It has no equal as a light for comfortable reading and writing.

The Holophane Engineering Department is always at your service to assist in the lighting of new buildings, or in improving the lighting of old buildings.

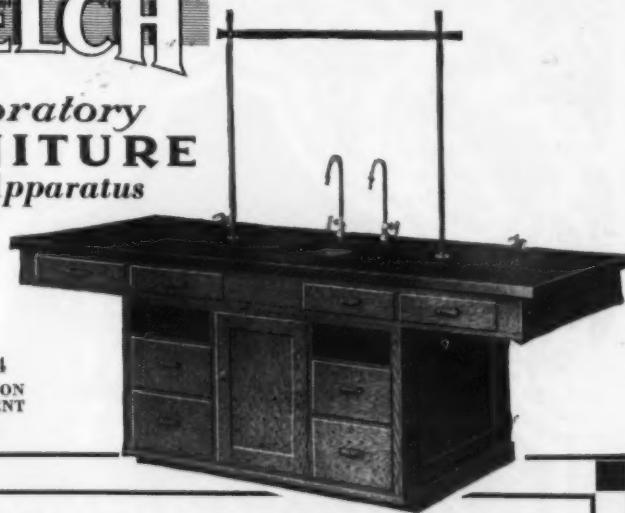
HOLOPHANE
342 Madison Ave.



COMPANY, Inc.
New York City

Works, Newark, Ohio
New York Chicago San Francisco Toronto

WELCH Laboratory FURNITURE and Apparatus



NO. 2574
COMBINATION
TWO-STUDENT
TABLE

Built - In Quality

Over half a century of not only knowing HOW, but actually using that knowledge and experience in the BUILDING of QUALITY Equipment, enable us to produce today a line of Laboratory Furniture unequalled in Dependability and Sturdiness.

*Our Engineers are always at your service—
No obligation whatever.*

1880—Over Fifty Years of Service to Schools—1932

W. M. WELCH MANUFACTURING COMPANY
GENERAL OFFICES: 1515 Sedgwick Street CHICAGO, ILLINOIS

LABORATORY FURNITURE FACTORY
MANITOWOC, WISCONSIN

SCIENTIFIC APPARATUS FACTORY AND WAREHOUSE
1516 ORLEANS ST., CHICAGO, ILLINOIS

BRANCHES

342 MADISON AVE. NEW YORK CITY 1916 WEST END AVE. NASHVILLE, TENN. 34TH AND BROADWAY KANSAS CITY, MO. 2226 GUADALUPE ST. AUSTIN, TEXAS

Like Thousands of Other Students All Over
the World She Prefers a MILLER



"RED DOT"

THE J. B. MILLER KEYLESS LOCK CO., 204 LOCK ST. (DEPT. F) KENT, OHIO
MANUFACTURERS OF KEYLESS LOCKS SINCE 1889

While attending the
N. E. A. CONVENTION
at Washington, D. C., Feb. 20-25

Be Sure to Visit
our Exhibit of

**BETTER
EQUIPMENT**
for your
STAGE

in Booth 304

Distinctive Quality and
Service at a Reasonable Cost.

Write

Twin-City Scenic Co.

2819 Nicollet Ave.
Minneapolis, Minn.

2310 Cass Ave.
Detroit, Mich.



**PREMIER
ENGRAVING
COMPANY**
Artists Engravers

Producers of Halftone and Line Engravings
in one or more colors . . . Benday color
plates . . . Two, three and four color pro-
cess plates.

Commercial Art Department
Illustrating, Lettering, Retouching,
Designing, and Layouts.

814 WINNEBAGO ST.
MILWAUKEE, WIS.



**BUY
GUARDS
NOT
GLASS**

For PERMANENT PROTECTION against damage
by accident and prevent tramps and other
undesirable persons from entering
buildings through windows.



ORDER FROM YOUR JOBBER

BADGER WIRE & IRON WORKS

Cleveland and Twenty-sixth Avenues
MILWAUKEE WISCONSIN



FLOOR RESEARCH

FREE FLOOR ADVICE

Every man interested in the efficient and economical maintenance of floors should have a copy of "Floor Research". Written by a nationally known floor consultant. Contains 48 pages of concise, helpful information. The only book of its kind. Sent to you with the compliments of the makers of Car-Na-Var, the perfect floor treatment.

CONTINENTAL CAR-NA-VAR CORP.
1811 National Ave., Brazil, Ind.

CAR-NA-VAR
THE PERFECT FLOOR TREATMENT

109 LIVES SAVED

With POTTER Tubular Slide FIRE ESCAPES

ON DECEMBER 4, 1931, the school building at Pilger, Nebraska, was destroyed by fire. 107 students and 2 teachers saved their lives by using the POTTER Tubular Slide Fire Escape. They came through without an accident or mishap, although the escape was covered with ice and snow. This, again, proves the efficiency of POTTER equipment.

HOW ARE YOU PROTECTING THE LIVES OF THE STUDENTS AND TEACHERS IN YOUR COMMUNITY?

Over 3,150 POTTER Tubular Slide Fire Escapes now in use, many with service records and no death or injury reports.

POTTER TUBULAR SLIDE FIRE ESCAPES

New lower price schedules now in effect. Potter Escapes are constructed in strict accordance with Underwriters' Laboratories specifications. Catalog on request.

Potter Mfg. Corp.
1858 Conway Bldg.
CHICAGO, ILL.



BUILDING NEWS

♦ Mendota, Ill. The high-school board has completed a new athletic field. Space is provided for a "turtle-back" playfield, properly tiled, a one-quarter-mile running track, with concrete curb and tiling. A junior high school, comprising 15 classrooms and a gymnasium, has been completed, at a cost of \$135,000.

♦ San Jose, Calif. The school board has recently completed the erection of the Hoover Junior High School, at a cost of \$2,500,000. The building was erected from plans prepared by Mr. W. H. Weeks, architect, San Francisco, Calif.

♦ Lansing, Mich. The board of education has insured all school buildings and their contents on a new five-year plan, on a basis of 90 per cent coinsurance. Under the five-year plan, the board anticipates a saving of a little more than 3 per cent on the premiums, as compared with the former three-year plan. The insurance has been apportioned among the local insurance agencies on a basis satisfactory to both the board and the agencies.

♦ Muskegon, Mich. The school board has voted to retain the schedule of charges for the use of school buildings by nonschool organizations. Under the schedule, the high school will be rented at a cost of \$31.50, and the junior high school at a cost of \$16.50. Where no admission fee is charged by an organization the fee will be \$6.50.

♦ Larksville, Pa. The school board has taken out insurance on 85 employees of the school district through a group policy placed with an eastern insurance firm. The amount of the policy involved is \$123,000, with the employees insured in amounts ranging from \$1,000 to \$3,000 according to the position held. The insurance is of the contributory type, with the employees paying a pro rata share of the premium, and the school district assuming the remainder of the cost.

♦ Moline, Ill. The school system has recently come into possession of the private residence, the former home of Mr. Frank Gates Allen, which has been given to the board of education. The property is valued at \$200,000 and includes a large building with many large rooms, which may be remodeled at little expense for school use.

The building will provide accommodations for

the administrative offices on the first floor. The large paneled library will be used as a library for high-school students, while the dining-room will be devoted to dinner meetings of the school clubs. The second floor will house the home-economics department of the high school and the Central Junior High School. The ballroom on the third floor provides space for the social affairs of the school organizations, as well as quarters for the caretaker of the building.

The action of Mr. Allen in giving this fine property to the schools has attracted considerable attention since such gifts are extremely rare.

♦ Minneapolis, Minn. The city board of estimate and apportionment has been asked to approve an additional \$450,000 worth of emergency work bonds for the schools. It was pointed out that, in the event the emergency bonds are approved, it will not be necessary to make reductions in salaries, or curtailments in school service. It was estimated

SCHOOL BONDS AND SCHOOL CONSTRUCTION DURING NOVEMBER, 1931

School-bond sales rose sharply during the month of November, as compared with the previous month. The sales amounted to \$6,378,733, as against \$3,259,000 in October.

The interest rate rose during the month to 4.45 per cent, which is the highest since October, 1929, when an average rate of 4.49 was quoted.

The sales in New York state amounted to \$2,225,000, and in New Jersey to \$1,273,000. In Utah, the sales were \$975,000, and in Texas, \$732,000.

According to Dodge figures, 128 school-building projects were undertaken in November in 37 states, with a total contract value of \$11,805,100. In the 11 western states not covered by Dodge, 12 school-building projects were undertaken, at a total contract valuation of \$1,753,849.

Building materials, according to the United States Department of Labor, continued their downward movement of prices during October, the average showing a decrease of slightly less than 1 per cent from September. Structural steel remained unchanged, and a minor increase was reported for brick.

that the saving of \$320,000 would more than balance the required \$621,824 reduction in the 1923 school budget.

♦ The city council of Wisconsin Dells, Wis., has approved a bond issue of \$70,000 for the erection and equipment of an addition to the high school.

♦ Syracuse, N. Y. The city council has been asked to authorize a bond issue of \$770,000 to carry on relief and school projects until next spring. The amount for new school construction is \$280,000, which is \$40,000 more than that of last year. It was estimated that this amount would be required to carry on the building program until the spring bond issue is authorized.

PERSONAL NEWS

♦ Mr. U. J. BENNETT has been appointed superintendent of schools in Broward county, Fla., succeeding J. M. Gerren, who has resigned. Mr. Bennett was principal of the Fort Lauderdale schools for five years.

♦ Mr. H. E. SPAULDING, of West Palm Beach, Fla., has been appointed to succeed Mr. U. J. Bennett at Fort Lauderdale.

♦ Mr. DAVID J. WEINS, of Lorain, Ohio, has accepted the position of supervisor of attendance and placement for the board of education at Cleveland.

♦ Mr. F. A. REDMOND, assistant director of the bureau of educational research at Cleveland, Ohio, died in a local hospital on December 4, following an operation. Mr. Redmond went to Cleveland from Ridgeville, where he had been superintendent of schools. He was a graduate of Ohio University.

♦ Dr. KENNETH G. MATHESON, 67, for the past ten years president of Drexel Institute, died at his home at Bryn Mawr, Pa., on November 30. Dr. Matheson was a graduate of the South Carolina Military Academy, and held degrees from Leland Stanford, Chicago, Columbia, and Washington and Lee Universities.

♦ Mr. R. G. HALL, formerly superintendent of schools at Cleburne, Tex., died at Cuthbert, Ga., on November 28. Mr. Hall was educated in Alabama and completed his postgraduate work at the University of Wisconsin, where he received his B.A. degree. At the time of his death he was a member of the faculty of Andrew's College.

♦ Mr. JOHN W. GRAHAM, business manager of the board of education at Dayton, Ohio, has resigned from the office, after completing five years of service in the schools. Mr. Graham went to Dayton from Chillicothe in 1926, when he was appointed to the position by the Dayton board.

Teacher Agencies

Fisk TEACHERS AGENCY **CHICAGO** OUR SERVICE IS NATIONWIDE

Experienced placement authorities in charge of every phase of educational activity. Our work includes positions from college executives to primary and kindergarten teachers. Excellent librarians, secretaries, teachers of physical education and home economics are on our lists. Write for information.
ADDRESS 857 STEGER BLDG., CHICAGO, ILL.

TEACHERS WANTED
For Schools and Colleges—
Every day of the year

D. H. Cook, Gen. Mgr.

NATIONAL TEACHERS AGENCY, INC.

Home Office—Philadelphia, Pa.

BRANCH OFFICES

Pittsburgh, Pa., Syracuse, N. Y., Northampton, Mass., New Haven, Conn., Cincinnati, O., Bowling Green, Ky., Jacksonville, Fla., Washington, D. C.

Positions waiting—correspondence confidential.

Schermerhorn Teachers' Agency

Established 1855

CHARLES W. MULFORD, Prop.

366 Fifth Ave.,
between 34th and 35th Sts.,
NEW YORK

A Superior Agency for Superior People.

Services Free to School Officials.

MEMBER NATIONAL ASSOCIATION OF TEACHER AGENCIES

Branch Offices:
1086 Union Trust Bldg., Pittsburgh, Pa.
1836 Euclid Ave., Cleveland, Ohio.

We Register Only Reliable Candidates.

ITHACA TEACHERS AGENCY

PERSONAL SERVICE

Free to School Officials

130 BLAIR STREET

ITHACA, NEW YORK

SCHOOL PHYSICIANS, DENTISTS, NURSES

Amcoe's

"Our Service is Designed for YOU"

"PLACEMENT A SPECIALTY"

CENTRAL REGISTRY FOR NURSES

NATIONAL PHYSICIANS' EXCHANGE

THIRTY NORTH MICHIGAN AVE., CHICAGO

COLLEGE GRADUATES AND TEACHERS OF SPECIAL SUBJECTS
recommended exclusively. Report your vacancies now. 30th year. Leading bureau for teachers of commercial, industrial, and physical education.

SPECIALISTS' EDUCATIONAL BUREAU

320 N. Grand Bld.
ST. LOUIS, MO.

Member National Association
of Teachers Agencies.



Market Place Section

**FOR BETTER
STAGE CURTAINS**

Write

**UNIVERSAL
SCENIC STUDIO, INC.**
1218-24 No. Fifth St.
Milwaukee, Wisconsin

GEOMETRY WORKBOOKS

Abbreviated and Complete Editions
By R. R. Wallace and H. B. Kingsbury

Abbreviated edition, 40 cents

Complete edition, 76 cents

THE BRUCE PUBLISHING CO.
Milwaukee, Wis.

CLASSIFIED

Wanted—Capable, energetic, permanent representative by manufacturers of fine, moderate-priced geographical globes with exclusive sales features. Excellent commission basis. State present lines and territory covered. Address Dept. 46J, American School Board Journal.

DRAMATIC ART INSTRUCTORS

Here are some things YOU NEED—NOW.

E. L. GAMBLE'S BOOK OF COMEDY

Containing Parodies, Monologues, Skits, Sketches, Radio Gags, etc. Enough for an entire Musical Comedy or Revue. Price \$1.00 postpaid.

GAMBLE'S MINSTREL GAMBOLS

An Entire Minstrel Show, complete with Minstrel Openings, Olio Numbers, Songs, Gags, Skits, Afterpieces, etc. Price \$1.00 postpaid.

THE MYSTERY BOOK

Teaches how to perform thirty complete tricks and read Individual Character. Amazing, Instructive and Entertaining. Price 50c postpaid.

DUTIES OF A COMPANY MANAGER & ADVANCE AGENT

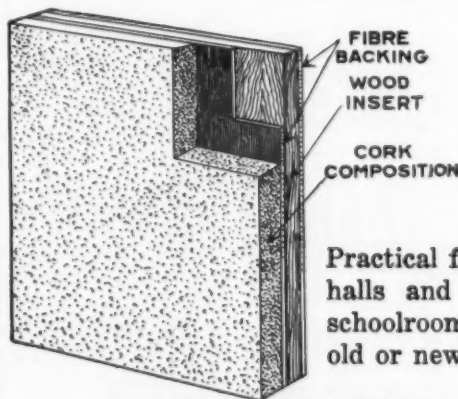
By PHIL YORK, teaches you all that is required to know in connection with the Management or Advance of an Attraction or Motion Picture Production. Price \$1.00 postpaid.

THE LINDNER CORP.—PUBLISHERS

415 LEXINGTON AVE.

Room 502

NEW YORK CITY



**"STANDARD"
CORK
Bulletin Board**

**THE BEST
BY
ANY TEST**

Practical for display purposes in halls and over blackboards in schoolrooms. Easily installed in old or new buildings.

USEFUL, ATTRACTIVE and PERMANENT
We Manufacture All Sizes. Write for Sample.

STANDARD BLACKBOARD CO.

Cor. Second and Walnut Sts.

ST. LOUIS, MO.

AMESBURY HIGH SCHOOL

BUILDING COMMITTEE

AUGUSTUS N. PARRY CHAIRMAN

MARTIN F. CONNELLY SECRETARY WILLIAM E. BIDDLE

GEORGE L. BRIGGS ARTHUR J. ANDERSON

GEORGE A. MERRILL EARL M. NELSON

PRESCOTT & SIDEBOTTOM ARCHITECTS

KENNEDY & PETERSON CONSTRUCTION CO. BUILDERS

THIS BUILDING ERECTED 1917

HONOR ROLLS—MEMORIAL TABLETS—IN BRONZE

MODELED, CAST AND FINISHED BY

ALBERT RUSSELL AND SONS CO.

125 MERRIMACK ST.

NEWBURYPORT, MASS.


COMPLETE STAGE EQUIPMENT



TIFFIN
Scenic Studios
TIFFIN, OHIO

SEND FOR CATALOGUE

THE *Aladdin's Lamp* OF THE CLASSROOM



**VICTOR 16 MM
MOTION PICTURE
PROJECTOR**

**MOST EFFICIENT
Easiest - to - Operate
of all
SCHOOL PROJECTORS**

**For "TALKIES" The ANIMATOPHONE
FREE**—Write for Victor Film Directory. Tells where to
"Buy, Rent and Borrow 16 mm FILMS"

Manufactured by VICTOR ANIMATOGRAPH CORP'N
DAVENPORT, IOWA

Distributed by NATIONAL THEATRE SUPPLY CO.
Branches in All Principal Cities

STAGE EQUIPMENT

For

Schools — Auditoriums — Colleges

Years of Experienced and efficient
methods are at your command.

Full particulars will be gladly sent
you.

Draperies — Scenery — Rigging

I. WEISS & SONS, INC.

445 W. 45th St.

NEW YORK CITY



**BE FAIR
TO THE CHILDREN**

Give them an even chance in case of fire. Install a signal with a volume that can be heard... one that possesses a distinctive tone more powerful than gongs, bells, whistles or other common sound producers. FEDERAL TYPE "A" SIRENS modernize the school fire signal. Write for Bulletin No. 38

FEDERAL ELECTRIC COMPANY
8714 So. State St., Chicago, Ill.



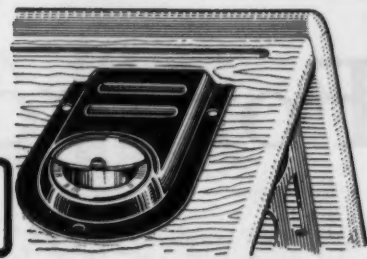
Send for these new catalogs of "CHICAGO" Equipment

These are more than catalogs. They are authoritative reference books that show the most complete lines of gymnasium, playground, field and sport apparatus and equipment built.

The "Chicago Line"—the recognized quality line—has been augmented with a number of new items never previously shown; has been improved throughout. Every item listed, in design, material, and workmanship, is distinctly a "CHICAGO" product, made in the "CHICAGO" plant as only "CHICAGO" can make it. Write for these valuable catalogs today.

CHICAGO GYMNASIUM EQUIPMENT CO.
1835 West Lake Street, Chicago, U. S. A.

U S INKWELL



Wins the approval of school authorities everywhere for a replacement well. It costs less. It "stays put" and cannot be damaged easily. It has no equal for durability. Ink spilling and "tinkering" is practically eliminated at desks fitted with U. S. Inkwells. Its dust-proof and air-tight construction also stops the trouble of ink drying. Teachers recommend it because of its noiseless operation.

Easy to Install

The ease with which U. S. Inkwells are installed in any type of school desk make them the outstanding favorite for replacement purposes. Anyone capable of handling a screw driver can put in U. S. Inkwells without trouble.

JOBBER

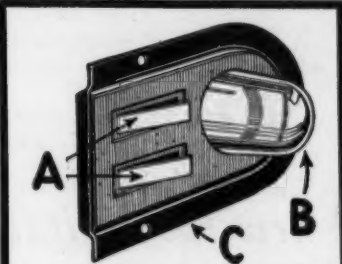
Most school supply jobbers carry U. S. INKWELLS. Free sample of either Junior or Senior well sent free to school executives.

AGENTS

Men or women to demonstrate U. S. Inkwells. Full or part time. Special commission proposition to teachers.

U. S. INKWELL CO.

410 S. W. 9th St.
Des Moines, Iowa



- A. Flat Steel springs (resting on desk) force well into air tight contact with lid.
- B. Heavy Glass Inkwell — Easily cleaned — Round bottom — Pupil cannot set on desk.
- C. Heavy Black japanned Steel Frame.

Strongest

The lid slides shut—making well air tight. Three screws attach well to the desk. Raised penholders in the steel frame increase convenience and strength.

The Columbia

A folding chair that is genuinely good through and through. At a price within the reach of all.

Send for circulars & prices.

VISIT OUR EXHIBIT AT THE
N. E. A. BOOTH NO. 111.

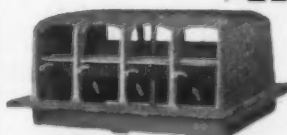
**Columbia
School Supply Co.**

Indianapolis,

Indiana



Check! THEY'RE TROUBLE PROOF KNOWLES TU-WAY AIR DEFLECTORS



New Improved No. 3 Type

Nothing to tamper with—Nothing to get out of order—yet its adjustment gives perfect control of air up to 100% delivery. These are points to check when considering school ventilation problems.

Send for school ventilation data.

KNOWLES MUSHROOM VENTILATOR CO.

14 NORTH MOORE ST.,

NEW YORK, N. Y.

For you...

Mr. Superintendent...

Mr. Board Member...

Mr. Secretary...

3 *new books vitally concerned with your professional problems*

1. LEGAL ASPECTS FOR RECORDS OF PROCEEDINGS OF BOARDS OF EDUCATION

By M. R. Keyworth, Ph.D.

Superintendent of Schools, Hamtramck, Michigan

An invaluable book which shows the source and limits of the power of the board to pass resolutions; the procedures to be followed which give legality to the form of the resolutions; and the requisite legal observances to be made in recording resolutions and proceedings in order that the records of the board may be complete and legal. Price, \$2.25.

2. EFFICIENT BUSINESS ADMINIS- TRATION OF PUBLIC SCHOOLS

By George Womrath

Business Superintendent, Minneapolis, Minnesota

Comprehensive in scope, this book clearly presents an abundance of material relative to the administrative activities of the public school official. It adequately considers such subjects as the selection of school building sites, architectural requirements, economies in construction, mechanical equipment, insurance, various phases of engineering service, supplies, textbooks, etc.

3. MINUTES OF A BOARD OF EDUCATION

By George W. Grill

Ass't. Superintendent of Schools, Lakewood, Ohio

This book is concerned with the functions of the secretary of the board, and it succeeds in providing him with a philosophy of secretarial service, constructive and helpful suggestions, and many forms of resolutions which will make his work lighter and better.



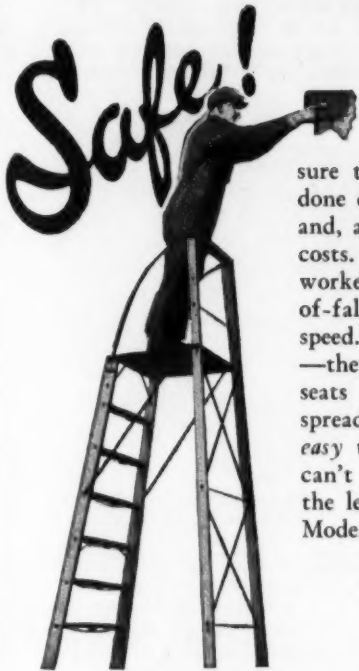
THE BRUCE PUBLISHING COMPANY

New York

MILWAUKEE

Chicago

KEEP THEM GOING GREAT!



Your year's now off to a good start. *Keep things going great!* Make sure that all your many ladder-jobs are done efficiently and fast. Remove danger and, automatically, you cut maintenance costs. Dayton Safety Ladders keep ladder-workers safe. They remove all that fear-of-falling which slows up a worker's speed. They get right next to blackboards—they're straight-backed. They straddle seats in safety—with their wide leg-spread. They make hard-to-reach places easy to reach. They stand solidly; they can't slip on any surface. They pay—so the leaders use them. Sizes 3 to 16 feet. Moderately priced.

Full Information from
Dept. SBJ-132

THE DAYTON SAFETY LADDER CO.
121-123 West Third St., Cincinnati, Ohio

DAYTON Safety Ladder

Stock carried on Pacific Coast by E. D. Bullard Co., Los Angeles and San Francisco, and by 160 other distributors from coast to coast. Made and distributed in Canada by Percy Hermant, Ltd., Toronto.

ROCKFORD LOCKER LOCK

Master Keyed Self Locking Combination

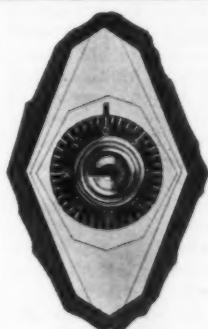
School Authorities have quick, easy access for convenient supervision because it is master keyed.

Locks itself when the door is closed. No need to turn the Dial. When the door is closed it is locked.

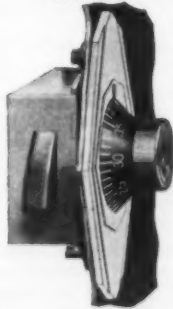
The three-number combination throws off automatically, when latch bar is released.

The chastely designed Escutcheon Plate is finished in dull chromium. No rivet heads or bolts are visible.

Specify the ROCKFORD Self Locking Locker Lock and have the added convenience, safety, accessibility, easy supervision and combination-change advantages which it provides. Available as standard Locker equipment.



No. 267



National Lock Co. Rockford, Illinois

Index to Advertisements

A. P. W. Paper Company.....109	Macmillan Company, The 98
American Abrasive Metals Co....70	Maple City Stamping Co..... 25
American Air Filter Co..... 11	Market Place114
American Crayon Company100	Mellaphone Corp. 92
American Seating Company 19	Miller Keyless Lock Co., The
Anstice Company, Josiah.....105	J. B.112
Athey Company.....111	Milwaukee Stamping Co..... 90
Austral Window Co.....4th Cover	Murphy-Davis Signal Co..... 25
Automatic Electric, Inc..... 71	
Badger Wire & Iron Works....112	Narragansett Machine Co.....108
Barrett Automatic Keyless Lock	Nash Engineering Co..... 26
Company 16	National Lock Co., The.....117
Bausch & Lomb Optical Co.... 98	National School Equipment Co. 23
Beckley-Cardy Company..... 25	National Steel Fabric Co...74 & 75
Billings Chapin Company, The.. 66	National Vulcanized Fibre Co.. 20
Binney & Smith Company..... 96	Natural Slate Blackboard Co... 1
Brown Company, The.....119	Nelson Corp., The Herman.....
Bruce Publishing Company.....1162nd Cover
Butler Manufacturing Co..... 17	Newcastle Products, Inc. 86
	New York Silicate Book Slate
Cabot, Inc., Samuel..... 76	Co.104
Carter Bloxonend Flooring Co.. 79	Norton Company 67
Celotex Company, The 81	
Chicago Gymnasium Equip. Co.115	Peabody Seating Company, The 21
Chicago Hardware Foundry Co. 91	Peterson & Co., Leonard..... 22
Christiansen Company, The 22	Potter Manufacturing Corp.113
Clow & Sons, James B.....2 & 3	Powers Regulator Co.8 & 120
Columbia School Supply Co....115	Premier Engraving Co.....112
Congoleum-Nairn, Inc. 65	
Continental Car-Na-Var Corp...113	Rastetter & Sons Co., Louis.... 22
Corbin Cabinet Lock Co..... 24	Reading Iron Company..... 77
	Richards-Wilcox Mfg. Company 12
Dayton Safety Ladder Co., The.117	Royal Metal Mfg. Co..... 20
Draper Shade Co., Luther O....110	Rundle-Spence Mfg. Co.....109
Dudley Lock Corporation110	Russell & Sons Co., Albert....114
Eastman Teaching Films, Inc... 97	Sanymetal Products Company.. 8
Evans, W. L.....104	School Architects Directory.14 & 16
Eveleth Mfg. Company..... 24	Sengbusch Self-Closing Inkstand
	Company 22
Federal Electric Co.....115	Sheldon & Company, E. H..... 93
Finnell System, Inc.....3rd Cover	Sjöström Co., Inc., John E....104
Finzer Bros. Clay Co., The.... 78	Sloan Valve Company..... 15
Ford Motor Company..... 89	Solar-Sturges Mfg. Co..... 24
	Spencer Heater Company 4
Gregg Publishing Co..... 98	Squires Inkwell Company..... 24
	Standard Blackboard Co.....114
Heywood-Wakefield Co.....101	Standard Electric Time Co., The 28
Hillyard Chemical Co.....102	Standard Pressed Steel Co..... 20
Hoffman Specialty Co., Inc. 10	Stewart Iron Works Co., The...111
Holden Patent Book Cover Co.. 98	Superior Body Company 72
Holmes Projector Company106	
Holophane Company, Inc.....111	Taylor Company, Halsey W. 64
Home Insurance Company, The.107	Teacher Agencies114
Horn Folding Partition Co..... 82	Thayer Tel-Kee Corporation...104
Huntington Laboratories 69	Tiffin Scenic Studios.....114
	Trenton Potteries Co. 9
Imperial Desk Company..... 18	Twin City Scenic Co.....112
International Business Machines	
Corp. 84	U. S. Inkwell Company115
Johns-Manville Corp.84 & 92	
Johnson & Son, S. C..... 87	Vestal Chemical Company..... 83
Johnson Service Company..... 5	Victor Animatograph Corp.....115
	Vonnegut Hardware Co. 6
Kewanee Boiler Corp..... 7	
Kewaunee Mfg. Company 85	Wallace & Tiernan, Inc..... 73
Kimball Company, W. W..... 80	Wayne Iron Works.....108
Knight, Maurice A.....103	Weber Costello Company..... 99
Knowles Mushroom Vent. Co...115	Weiss & Sons, I.....115
	Welch Mfg. Co., W. M.....111
Leitz, Inc., E..... 92	Western Electric Company 13
Libbey-Owens-Ford Glass Co... 63	Westinghouse Lamp Company.. 95
Lindner Corp., The114	Williams Pivot Sash Co., The... 10
	Wilson Corp., Jas. G..... 18
	York-Hoover Body Corp.....106

After the Meeting

THE LESSER EVIL

Dr. A. F. Harman, State Superintendent of Schools, began his career as a principal of a southern village school. Late one afternoon in the winter he stepped out of the school when a small boy dashed around the corner of the schoolhouse and ran straight into his arms.

When he had recovered his breath, Mr. Harman asked the boy the reason for all the hurry.

"Well, you see Mr. Harman," said the youngster, "we just finished the football game and I'm running home because mother is going to thrash me."

"Well, why be in such a hurry to be spanked?"

"I reckon," answered the boy. "If I don't get home before Dad does, he'll do it."

HE IS THAT!

Gossip is a common failing of bookmen as every superintendent has come to know. Most of the gossip is valuable—it reflects the improvements and advances of schoolmen and methods. Some of it is destructive and reprehensible.

It is told that Jonathan Piper, one of the pioneer bookmen, held steadfastly to the principle that no unkind word be said about the school people with whom he came in contact. When asked about his practice of saying only the pleasant things, he told this story:

An old Irish woman of kindly disposition was chided by her daughter for withholding some gossip information about a neighbor.

"Sure mother," the daughter said, "I believe you'd spake well of the devil himself."

"Wurrah" was the calm reply. "He's not so gude as he ought to be, but he's sure an industrious body."

SAME MOTHER

Teacher: Joseph, why is it that your essay "My Mother" reads word for word like your brother Frank's?

Joe: Well, Teacher, we both have the same mother.—*Exchange.*

"I once tried to teach a little Alabama boy to speak pure English," writes Octavus Roy Cohen. "I'll never forget the despairing way he said to me at the end of the thirtieth or fortieth lesson: 'Dey aren't no 'ain't you,' is dey? It's 'aren't you,' ain't it?'"

Buyers' News

TRADE NEWS

Truscon Takes Over Berger Building Products Division. The Truscon Steel Company, Youngstown, Ohio, has enlarged its sales possibilities by taking over the Berger Mfg. Company Building Products Division at Canton.

The division will be operated as the Berger Building Products Division of the Truscon Steel Company and the present policies and selling organization will be continued as formerly. The Berger Company has manufactured a line of products similar to those of the Truscon company and its products are in constant demand by school officials throughout the country.

Victor Directory of Film Sources. The Victor Animatograph Company, of Davenport, Iowa, has just issued its new directory of film sources, telling where to buy, rent, and borrow films for school use. The directory lists film producers who specialize in special pictures, and information on educational talkies, film projection, and sound production. Complete information and prices may be obtained upon request.

TRADE PRODUCTS

New Ford School Bus. The Ford Motor Company, of Detroit, Mich., has entered the school field with the construction and marketing of a new school bus for rural-school communities. The Ford bus has been designed for convenience, safety, durability, and economy in operation. The bus body is built on the Ford Model AA truck chassis because of its proved reliability, endurance, and economy under all conditions. In general use, the bus will be found to provide in an outstanding way, safe and economical transportation of rural-school children.

The new Ford bus has many unique features which make it attractive to school users. A special seating arrangement provides comfortable accommodations for 32 passengers and the driver. Ten children may be seated on the two long side seats, with twelve on the six cross seats running down the center of the bus. All

seat backs and cushions are upholstered with imitation leather. As a safety feature, special laminated glass has been used in the windshield, and in the doors and windows, as a means of eliminating one of the great hazards in motor transportation. Six of the fifteen windows in the bus are equipped with a regulating device for insuring abundant ventilation.

The bus body is built of heavy steel, which insures rigid construction, economy in maintenance, and years of satisfactory use. The exterior is finished in a variety of colors to suit the taste of the purchaser and to make



ONE OF A FLEET OF STURDY FORD SCHOOL BUSES OPERATED BY SCHOOL DISTRICT NO. 1, KOONCHICHING COUNTY, MINNESOTA

an attractive appearance. A full-length exhaust pipe has been installed to carry the engine fumes to the rear and prevent the leaking of poisonous gases into the interior. The front door is equipped with a special peep window for the driver, so that he may have a clear view of waiting passengers. The door is provided with a special safety-locking device under the direct control of the driver. The rear door is arranged to prevent accidents, but may be opened quickly in case of emergency.

School authorities who are interested may obtain complete information and prices upon request.

New Model Victor Animatophone. The Victor Animatograph Corporation, Davenport, Iowa, has announced a new model animatophone, 16 mm. talking motion-picture projector, which is adaptable to the requirements of nontheatrical motion-picture users, such as schools and educational institutions.

The new projector has been made compact and efficient through the acquisition of a "blimp" type case for enclosing the projector while it is in operation. The design of the case is such that the turntable is attached from the outside to the shaft in the side opening, and access is gained for threading by opening the right-hand side of the case. During operation, the case is closed and the picture is projected through a slot, an arrangement which renders the sound of the motor and film movement practically inaudible.

Complete information and prices may be obtained by any school official upon request.

Announce New Metal Blackboard. The American Seating Company, Grand Rapids, Mich., has announced the marketing of a new metalboard for blackboard purposes. It is a porcelain-enamel-on-steel blackboard and is known under the trade name of Metalboard.

The new blackboard material has a number of distinct advantages for classroom use. It possesses a permanent black color which remains uniform; it does not become glossy, will not reflect light, and obviates eyestrain. The uniform grain insures a smooth writing surface which is absolutely free from imperfections. It will not scratch, chip, or flake, and withstands blows and abrasions from ladders, or window poles, which usually shatter less sturdy blackboard materials. It is easily shipped without fear of damage or breakage.

The most important feature of the board is the absolute adherence of the enamel to the rustless steel base. This feature insures practically permanent life to the board.

Complete information and prices may be obtained by any school official upon request.

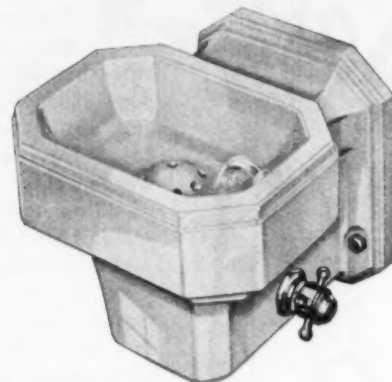
New Powers Radiator Valve. The Powers Regulator Company, 2720 Grandview Ave., Chicago, Ill., manufacturers of temperature-controlling apparatus, has announced the marketing of a new thermostatic radiator valve for use with vacuum or vapor steam-heating systems.

The new radiator valve is a self-operating regulator and is designed to control the temperature of rooms heated by direct, indirect, or concealed radiation of vapor or vacuum heating systems. The valve has three points of advantage, namely, the control is influenced by the radiant heat from the radiator; the regulator may be used with one of two types of thermostat, for use with concealed radiation, unit heaters, and wall radiators; and the temperature control is influenced by the surface of the thermostat which is affected by the room temperature and the area of the diaphragm, making the action of the regulator more powerful and more immune to pressure changes in the steam-supply line.

Complete information and prices may be obtained by any school official, or architect, upon request.

New Rundle-Spence Drinking Fountains. Five colors to harmonize with wall colors and wood trim of school buildings, and a distinctly modernistic design, are features of a new, improved line of drinking fountains just announced by the Rundle-Spence Mfg. Company, Milwaukee, Wis.

The fountains are of highly-glazed vitreous china, in a variety of colors, and are provided with an integral china strainer, supported on a concealed wall



THE NEW RUNDLE-SPENCE COLORED SCHOOL DRINKING FOUNTAIN

hanger. The stream head is of the nonsquirting type, the exposed brass is chromium plated, and each fountain is controlled by a patented ball-bearing, self-closing mechanism, comprising a key, a regulator, and a trap. The pressure regulator is of high-grade patented construction and is 90 per cent efficient on pressure variations in excess of 25 to 100 pounds.

Complete information and prices may be obtained by any school official upon request.

New Superior All-Steel School Bus. The Superior Body Company, of Lima, Ohio, has announced its 1932 line of all-steel school-bus bodies.



THE NEW SUPERIOR ALL-STEEL SCHOOL BUS

The new school bus is of all-steel construction, is equipped with shatterproof glass, steel floor covered with battleship linoleum, and diamondette tread on entrance steps, and insures ample ventilation, freedom from the fume hazard, unobstructed vision from the interior, larger seating capacity, quietness, and long life in use. The Superior bus has been tested and proved in service and may be obtained at a very low price. It is available in four different lengths, in various



DETAILS OF THE ALL-STEEL SUPERIOR SCHOOL BUS

seating arrangements, and is furnished in either genuine leather, or imitation, as desired.

Complete information and prices may be obtained by any school official upon request.

*It will stand a
tug-of-war
—try it.*

Take a Nibroc Towel. Wet it across the middle. Hold one end of it firmly with two hands. Let a good stout "husky" hold the other end. Now—both pull! Note its great strength!



An Amazing New Idea in Paper Towels

—WET STRENGTH

NIBROC TOWEL

"It has Great Wet Strength"

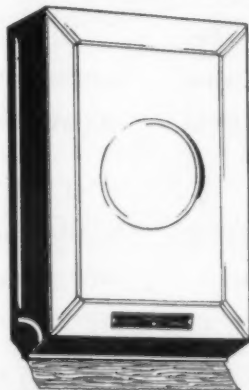
A SPECIAL Process, developed by Brown Company in their research laboratory, has created in Nibroc Towels *greater wet strength* and *quicker absorption* than ever before known in a paper towel.

The user can now wipe his or her hands and face with perfect assurance that Nibroc Towels will not disintegrate when coming in contact with moisture, no matter



ECONOMY

One case of Nibroc Towels will do the work of two or three and sometimes four cases of ordinary towels.



Handsome white enamelled cabinets are loaned to users. Hold three hundred Standard or four hundred Junior towels. Cabinet dimensions are 10½" wide, 15" high, 3¼" deep.

how roughly they are used.

Nibroc also retains its softness, is good to even the most sensitive skin; free from lint or fuzz and exceptionally absorbent.

One Nibroc will do the work of two, three and sometimes four ordinary towels. Nibroc are preferred by buyers as well as users.

Use Nibroc for a more satisfactory and economical towel service.

BROWN
Company

FOUNDED 1852



Portland, Maine

NEW YORK

ST. LOUIS

BOSTON

SAN FRANCISCO

CHICAGO

MONTREAL

PARIS

THE OLD WALNUT HILLS
HIGH SCHOOL, CINCINNATI,
OHIO - - - BUILT IN 1908



23 YEARS OF DEPENDABLE SERVICE

rendered by POWERS TEMPERATURE CONTROL
in this school was one of the reasons why POWERS
REGULATION was selected for the New WALNUT
HILLS HIGH SCHOOL, CINCINNATI.



After 23 years of dependable regulation in the old Walnut Hills High School, the Powers System of Temperature Control is still giving excellent service and will continue to do so for many more years.

Because of this and many similar records of long life and dependable service, Powers Control is being installed in the new school shown above, which is one of the largest in the State of Ohio.

While the first cost of Powers Control is often higher; it costs much less in the end, because:—

Architects:

Garber & Woodward



Consulting Engineer:

William E. Bodenstein



Heating Contractors:

The John J. Vogelpohl Co.

1. It often gives 15 to 20 years of Accurate and Dependable control without repairs of any kind.

2. Greater Steam Economy due to the fact that thermostats do not get out of adjustment and permit overheating.

3. Graduated Control, because of its greater accuracy, provides maximum comfort for occupants of rooms.

4. A minimum of Service Calls and the trouble and annoyance connected with them.

POWERS THERMOSTATS ARE BETTER

Because...they need no annual adjustments or overhauling and often give 15 to 20 years of accurate control without repairs of any kind.

THE POWERS REGULATOR COMPANY

40 Years of Specialization in Temperature Control

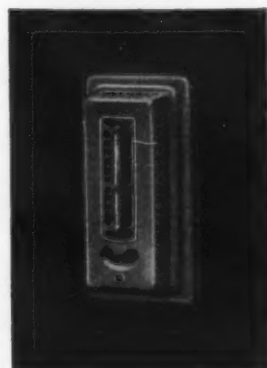
CHICAGO: 2721 Greenview Avenue

NEW YORK CITY: 231 East 46th Street

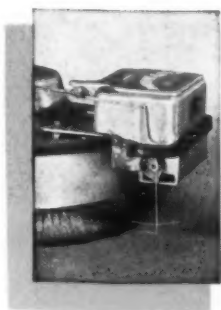
Offices in 43 Cities

The Canadian Powers Regulator Company, Toronto, Ontario

POWERS



Everything you need to keep floors in perfect condition



SCRUBBERS

Nine Models from which to choose

POLISHERS

For beautiful, protected slip-proof floors

FINNELL-KOTE

Faster, goes further, lasts longer

SOLAR-BRITE

An alkali-free, liquid scrub soap

FINOLA

Safe and efficient scouring powder

SOLAR SOAP POWDER

Wherever soap powder is needed

FULFIL

For filling floors before waxing

TERRAZZOFIL

For filling terrazzo floors

"What can we do to this floor?" . . . If that question is bothering you, put it up to Finnell.

"What shall we use on this floor?" . . . For safety and results choose from Finnell products.

"How shall we apply it to the floor?" . . . For economy and efficiency, use a Finnell Scrubber-Polisher.

Old floors, new floors . . . a million square feet or a few thousand . . . by putting your problem up to the Finnell organization you can obtain the counsel, the material, the equipment you need.

The Finnell line of scrubber-polishers is complete. The large combination Finnell for corridors, gymnasiums and other large areas, scrubs and picks up the water in one operation . . . does a complete job in less than mopping time. The smallest Finnell is light enough to be lifted in one hand . . . can be used to polish stair steps or desk tops. Seven other sizes in between «» a right size for every need.

Finnell-Kote is more than just a wax. Applied hot to the floor and polished in the same operation, it takes less time, goes further and lasts longer.

Ask for illustrated pamphlet. Upon receipt of your request, information of interest particularly to school trustees, superintendents, caretakers, etc., will be sent. No obligation. If you say so, a representative, skilled in floor maintenance, will call and make a free survey of your floors. Address FINNELL SYSTEM, Inc., 801 East Street, Elkhart, Indiana.

FINNELL SYSTEM

OF FLOOR MAINTENANCE

THE NEW AUSTRAL BOOK OF SCHOOLS

SHOWS OVER 300 MODERN SCHOOLS AND CONTAINS
COMPLETE DATA ON SCHOOL VENTILATION

SEND FOR YOUR COPY

